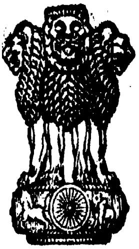

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STUDIES OF AMERICAN PLANTS—IX

BY

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STUDIES OF AMERICAN PLANTS—IX

PAUL C. STANDLEY

During the past few years the writer has had occasion to determine many collections of tropical American plants, in some of which were found the apparently new plants described upon the following pages. The majority of the new species here described are from the rich collections made in the Chiriquí region of Panama by Mrs. M. E. Davidson; from the large series obtained in Sonora and Chihuahua by Mr. Howard Scott Gentry; from the Mexican plants obtained by collectors from the University of Texas, particularly Mr. Harde LeSueur; and from various series forwarded by Dr. C. L. Lundell of the University Museums of the University of Michigan. Most of these collections contain numerous additional new species whose descriptions have not yet been prepared.

The writer is under special obligations to Dr. William Trelease, who supplied descriptions of the new Piperaceae, and to Dr. Robert E. Woodson, Jr., who furnished the diagnosis of a new species of *Zschokkea* discovered the past season in Guatemala.

ARACEAE

Anthurium clidemioides Standl., sp. nov.—Epiphytica scandens, caudiculo elongato flexuoso gracili vix ultra 2 mm. crasso viridi albo-verrucoso, internodiis elongatis; petiolus ca. 3 cm. longus viridis longe anguste vaginatus; lamina deltoideo-ovata usque 12.5 cm. longa atque prope basin 7.5 cm. lata longe angusteque attenuato-acuminata, basi breviter cordata, sinu aperto lato, lobis posticis late rotundatis, supra laete viridis ubique arcte bullata, nervis venulisque profunde impressis, subtus pallidior ubique profunde lacunosa, e basi 5-nervia, nervis 2 interioribus fere ad apicem protractis; inflorescentia sessilis, spatha pallide viridi lanceolata ca. 4 cm. longa longe anguste attenuata tenui suberecta; spadix 4.5 cm. longus supra basin 5 mm. latus, e basi ad apicem paullo angustatus. —Costa Rica: Villa Quesada, San Carlos, alt. 800 meters, March 6, 1938, *Manuel Valerio* 1726 (type in Herb. Field Mus.).

This is one of the most distinct and most remarkable of all the many species of *Anthurium* known from Central America, and I have seen no similar plant from any other region. The strongly

and closely bullate leaves, with melastomoid venation, strongly suggest those of certain Melastomaceae, particularly of the genus *Clidemia*.

Anthurium Davidsoniae Standl., sp. nov.—Ut dicitur terrestris, caudiculo elongato 6 mm. crasso, internodiis brevibus; cataphylla lineari-attenuata usque 12 cm. longa in sicco fusco-ferruginea; petioli gracillimi 12–19 mm. longi; lamina ovato-ovalis vel late ovalis 15–18 cm. longa 9.5–11 cm. lata, apice obtusa et subito caudato-acuminata, acumine angusto 2 cm. longo et ultra, basi late breviterque cordata, lobis posticis late rotundatis, membranacea, supra pallido-viridis, subtus paullo pallidior, e basi 9-nervia, costa prominente gracillima, nervis lateralibus utroque latere ca. 12 angulo semirecto adscendentibus tenerrimis subarcuatis prope marginem in nervum collectivum conjunctis, venulis prominulis laxe reticulatis; pedunculi graciles 9–11 cm. longi; spatha reflexa anguste oblonga in sicco fusco-brunnea ca. 3 cm. longa atque 5 mm. lata longiacuminata; spadix sessilis obtusus 2.5–3.5 cm. longus 3–4 mm. crassus.—Panama: In rain forest, Bajo Chorro, Boquete District, Provincia de Chiriquí, alt. 1,800 meters, January 17, 1938, *Mrs. M. E. Davidson* 134 (type in Herb. Field Mus.).

Anthurium seamayense Standl., sp. nov.—Epiphytica, caudiculo ut videtur brevi ca. 7 mm. crasso, internodiis brevibus; cataphylla ca. 5 cm. longa brunnea lanceolata rigida acuminata striata; petiolus gracillimus basi vix dilatatus 22–26 cm. longus, geniculo 12 mm. longo; lamina oblongo-ovata ca. 22 cm. longa atque 10 cm. lata subito breviter cuspidato-acuminata, basi profunde cordata, lobis posticis 6.5 cm. longis 4.8 cm. latis late rotundatis, sinu angusto vel clauso, utrinque lucida, e basi 5-nervia, nervis infimis trifurcis, costa subtus elevata gracili utroque latere supra basin nervos ca. 8 prope marginem in nervum collectivum conjunctos emittente, venulis prominulis laxe reticulatis; pedunculus petiolis subaequalis ca. 22 cm. longus gracillimus; spatha reflexa lanceolato-oblonga in sicco brunnea 4.5 cm. longa 1 cm. lata longiuscule acuminata; spadix sessilis obtusus 4 cm. longus 4 mm. crassus.—Guatemala: In virgin forest, Seraxcaj, Finca Seamay, Alta Verapaz, alt. 960 meters, February 15, 1939, *C. L. Wilson* 211 (type in Herb. Field Mus.).

COMMELINACEAE

Tradescantia anisophylla Standl., sp. nov.—Herba ramosa ut videtur procumbens, caulibus gracillimis glabris, internodiis plerumque foliis longioribus; vaginae angustae 12–15 mm. longae ore valde obliquae brunnescentes, margine dorsoque dense pilis albidis longis patentibus hirsutae; folia inaequalia, superiora latiora, ovato-oblonga vel ovata, bracteis interdum subdeltoideo-ovatis, 4–5 cm. longa 2–2.5 cm. lata acuminata vel longiacuminata, basi subito contracta et truncata vel late rotundata, glabra; inflorescentia terminalis breviter vel longissime pedunculata dense multiflora, bracteis foliis conformibus sed paullo latioribus paulo inaequalibus, pedicellis filiformibus usque 15 mm. longis pilis longis albidis laxis patentibus pilosis; sepala lanceolato-linearia ca. 6 mm. longa pellucida viridi-costata apice breviter piloso-penicillata; petala caerulca 8 mm. longa et ultra eleganter venosa; stamina inaequilonga, filamentis longipilosis.—Mexico: Mount Tacaná, Chiapas, alt. 1,000–2,000 meters, August, 1938, *E. Matuda* 2505 (type in Herb. Field Mus.).

In general appearance this is much like *T. tacanana* of the same region, but there are obvious differences in the form of the leaves and sheaths.

Tradescantia belizensis Standl., sp. nov. Herba ramosa, caulibus ut videtur procumbentibus ad nodos radicantibus pilis longissimis mollibus albidis patentibus vel subadpressis pilosis, internodiis foliis longioribus vel brevioribus; vaginae sublaxae 9–12 mm. longae plus minusve dense pilis longis albidis pilosae; folia lanceolato-oblonga 4–8 cm. longa 1.3–2.8 cm. lata longiacuminata, basi obliqua et breviter abrupte contracta, utrinque pilis longissimis laxis pallidis sat dense pilosa; inflorescentia terminalis longipedunculata vel interdum breviter tantum pedunculata, bracteis foliis conformibus atque fere aequilongis basi valde dilatatis patentibus, floribus longe vel breviter graciliter pedicellatis; petala pallido-rosea ca. 8 mm. longa glabra; stamina inaequalia, 3 breviora, filamentis longipilosis.—British Honduras: On hilltop, Vaca, El Cayo District, February 23, 1938, *Percy H. Gentle* 2228 (type in Herb. Univ. Michigan; fragment in Herb. Field Mus.).

Tradescantia Lundellii Standl., sp. nov.—Herba ramosa procumbens(?), caulibus gracillimis glabris vel in sulcis breviter pilosis, internodiis elongatis sed foliis brevioribus; vaginae angustae ca. 1 cm. longae ore oblique truncatae et dense pilis longissimis laxis pallidis pilosae, dorso quoque breviter pilosae; folia anguste oblongo-lanceolata vel lineari-lanceolata 2.5–5.5 cm. longa 3–12 mm. lata longe anguste attenuata basi obliqua obtusa vel subrotundata glabra; flores umbellati, umbellis axillaribus et terminalibus solitariis vel geminatis pedunculos gracillimos interdum recurvos usque 3 cm. longos terminantibus, basi bracteis 2 pallidis lanceolato-linearibus usque 5 mm. longis fulcratis, plerumque 2–4-floris, pedicellis filiformibus usque 1 cm. longis glabris; sepala tenuia ovalia vel oblonga pallide viridia 2–2.5 mm. longa glabra obtusa; petala alba late elliptica vel ovalia apice rotundata glabra; stamina inaequalia, filamentis longipilosis.—Mexico: Tamazunchale, San Luis Potosí, in second growth on wet hillside, alt. 300 meters, July, 1937, *C. L. & Amelia A. Lundell* 7098 (type in Herb. Field Mus.; duplicate in Herb. Univ. Michigan). Chapulhuacán, Hidalgo, in wet *Liquidambar* forest, alt. 1,300 meters, July, 1937, *C. L. & Amelia A. Lundell* 7160.

Noteworthy for the combination of slender habit, short, narrow leaves, and small, white flowers arranged in small, open, lax umbels.

Tradescantia plusiantha Standl., sp. nov.—Herba erecta(?) vel decumbens 40 cm. longa et ultra ramosa, caulibus gracilibus dense minute pilis patentibus villosulo-pilosulis, internodiis valde elongatis folia fere aequantibus; vaginae laxae ca. 1 cm. longae oblique truncatae ubique dense minute pilosulae, margine breviter hirsutae; folia majuscula oblongo-elliptica vel ovato-oblonga 13 cm. longa et ultra 3.5–4.5 cm. lata anguste acuminata, basi cuneato-acuta atque in petiolum crassiusculum usque 1.5 cm. longum contracta, supra sparse minute pilosula vel glabrata, subtus sparse puberula vel fere glabra; inflorescentia terminalis, floribus umbellulatis, umbellulis in umbellam laxam multiradiatam dispositis, umbellae radiis gracillimis suberectis inaequalibus ad 5 cm. longis dense breviter villosulo-pilosulis; bracteae umbellulam fulcrantes rotundato-ovatae virides 10–14 mm. longae obtusae vel acutae basi breviter coalitae complanatae minute puberulae; flores in umbellula numerosae, pedicellis gracillimis ad 4 mm. longis glabris; sepala tenuia ovata subacuta ca. 3 mm. longa viridescentia sparse breviter pilosula vel glabrata; petala ut videtur alba.—Mexico: Mount Ovando, Chiapas, alt. 1,250–2,370 meters, July, 1938, *E. Matuda* 2569 (type in Herb. Univ. Michigan; fragment in Herb. Field Mus.).

No other species that I have seen is closely similar to this, which is outstanding because of the large, broad, thin leaves, and the very numerous and umbellate spathes.

Tradescantia tacanana Standl., sp. nov.—Herba ramosa ut videtur decumbens vel procumbens, caulibus gracilibus elongatis glabris, internodiis elongatis, interdum foliis longioribus; vaginae angustae ca. 12 mm. longae margine dorsoque pilis longis albidis rigidiusculis sat dense hirsutae striato-nervosae ore subtruncatae; folia lanceolato-oblonga 7–9 cm. longa ca. 2.5 cm. lata longe attenuato-acuminata, basi subobliqua obtusa subito contracta, glabra; inflorescentia terminalis umbelliformis sat longe pedunculata, bracteis 2 foliis conformibus usque 5.5 cm. longis; flores pauci longipedicellati, pedicellis filiformibus ad 14 mm. longis sparse pilis longis laxis patentibus pilosis; sepala lineari-oblonga attenuata 6 mm. longa apice piloso-penicillata; petala ut videtur caerulea.—Mexico: Mount Tacaná, Chiapas, alt. 1,000–2,000 meters, August, 1938, *E. Matuda* 2504 (type in Herb. Univ. Michigan).

SMILACACEAE

Smilax calocardia Standl., sp. nov.—Frutex scandens, caulibus superioribus gracillimis teretibus brunneis striatis inermibus fere omnino glabris, in statu juveni sparse pilosis, internodiis elongatis; folia mediocria longiuscule petiolata coriacea, petiolo 1.5 3 cm. longo sparse hinc inde piloso, prope basin densius piloso longivaginato crasso; lamina late ovata vel orbiculari-cordata 6–10 cm. longa 3.5–8.5 cm. lata longiacuminata vel apice rotundata atque apiculato-acuminata, basi profunde cordata, integra, lobis posticis late rotundatis, sinu aperto vel clauso, supra lucida glabra, nervis venisque prominentibus atque arcte pulchre reticulatis, subtus concolor glabra vel glabrata, in statu juvenili ut videtur sparse pilosa, e basi 9-nervia, plus minusve lucida, venulis prominentibus atque eleganter arcteque reticulatis; umbellae masculae solitariae axillares, pedunculo rigido ca. 1 cm. longo densiuscule breviter villoso petiolo multo breviore; receptaculum globosum ca. 3.5 mm. diam. dense pilosum, bracteolis numerosis dense aggregatis; pedicelli graciles 4–5 mm. longi dense pilosi; perianthii segmenta oblongolinearia obtusa fere 5 mm. longa extus sparse pilosa.—Panama: Volcán de Chiriquí, Prov. Chiriquí, alt. 2,250 meters, July 13, 1938, *Mrs. M. E. Davidson* 953 (type in Herb. Field Mus.); "flowers cream."

Evidently a relative of *Smilax Purpusii* Brandegee, native in Chiapas, but sufficiently distinct specifically, and well isolated geographically.

ZINGIBERACEAE

Renealmia chiriquina Standl., sp. nov.—Herba erecta 45–75 cm. alta, caule crassiusculo in sicco striato; folia pauca, vaginis longissimis laxe vaginantibus arcte striato-nerviis, apice subito contractis et rotundatis; lamina sessilis anguste lanceolato-oblonga 8-18 cm. longa 2.5-4 cm. lata subabrupte anguste acuminata crasse chartacea glabra; caulis fertilis fere 40 cm. altus, foliis omnibus ad vaginas rigidas 5-6 cm. longas reductis; inflorescentia parva 2.5 cm. longa et aequilata densa, bracteis in sicco pallidis ovalibus costato-nervosis 1.5-2 cm. longis apice rotundatis et breviter caudato-apiculatis, rhachi brevi ut pedunculus dense minute patenti-pilosula, pedunculis crassis 3 cm. longis; bracteolae in involucellum campanulatum 7 mm. longum brevissime lobatum coalitae, floribus sessilibus; ovarium columnare 2.5 mm. longum tomentulosum.—Panama: In rain forest, Bajo Chorro, Boquete District, Provincia de Chiriquí, alt. 1,800 meters, "flowers light yellow," March 7, 1938, *Mrs. M. E. Davidson* 386 (type in Herb. Field Mus.).

The plant is unusual in the genus, at least as compared with Central American representatives, because of the remarkably small leaf blades.

PIPERACEAE

Lindeniopiper Williamsii Trelease, sp. nov.—Arbuscula ramosa, ramis fere e basi nascentibus nodosis, internodiis brevibus gracilibus puberulis; folia oblonga longiacuminata, basi oblique cordulato-auriculata, lobo longiore petiolum occultante, 8-9 cm. longa 1.5-2.5 cm. lata, multiplinervia, nervis 3 fere basalibus adjectis, nervis supra basin folii ca. 7×2 angulo fere recto abeuntibus, subtus pallidiora plus minusve puberula, petiolo 5 mm. longo puberulo; spicae ramulum brevem sympodialem 1-foliatum terminantes 25 mm. longae, pedunculo 10 mm. longo; bracteae cucullatae; baccae subglobosae glandulosae; stigmata 3 lata sessilia.—Mexico: Coatzacoalcos, Veracruz, *Llewelyn Williams* 8386 (type in Herb. Field Mus.).

Peperomia cambuquirana Trelease, sp. nov.—Herba parvula glabra stolonifera, caule filiformi; folia alterna lanceolato-elliptica vel (infima) subovata obtusa, superiora sensim acuta vel subacuminata, 2-4 cm. longa 1 cm. lata, subobscure trinervia, petiolo filiformi 10 mm. longo; spicae vix 10 mm. longae atque 2 mm. crassae, pedunculo 3 mm. longo.—Brazil: Matta da Empreza, Cambuquira, State of Minas Gerais, *H. Mello Barreto* 7235 (type in Herb. Field Mus.).

Peperomia coatzacoalcosensis Trelease, sp. nov.—Ut videtur herba parva ramosa arboricola, internodiis brevibus gracilibus breviter villosis, inferioribus glabrescentibus; folia alterna anguste lanceolata utrinque sensim acuta, ca. 2.5–4 cm. longa atque 1 cm. lata, utrinque plus minusve molliter pilosa, obscure trinervia, petiolo 2 mm. longo pubescente; inflorescentia non visa.—Mexico: Fortuño, Coatzacoalcos, Veracruz, alt. 30–50 meters, *Llewelyn Williams* 8509 (type in Herb. Field Mus.).

Peperomia erasmiaeformis Trelease, sp. nov.—Herba majuscula stolonifera erecta simplex glabra, caule crassiusculo 5 mm. crasso nodoso, internodiis brevibus; folia pauca ad apicem caulis aggregata anguste lanceolata utrinque acuta 18–20 cm. longa 3 cm. lata, pinnatim ca. 13-nervia, subtus aliquanto pallidiora, petiolo 1–3 cm. longo; spicae plures late divaricatae atque paniculam latam foliis longiorem apertam efformantes 80 mm. longae 3 mm. crassae, pedunculo 5 mm. longo; ovaria anguste oblonga, scutulo acuto erecto infra medium stigmatifero.—Venezuela: Cloud forest, Rancho Grande, State of Aragua, alt. 1,200–1,500 meters, *H. Pittier* 13985 (type in Herb. Field Mus.).

Peperomia flagrans Trelease, sp. nov. Scandens majuscula glabra carnosa, internodiis brevibus crassis; folia alterna elliptico-subovata subacuminata, basi obtusa, 9–10 cm. longa 4–5 cm. lata, in sicco opaca ca. trinervia, petiolo 5 mm. longo crasso; spicae singulae oppositifoliae erectae obscure rubrae 100–150 mm. longae 8 mm. crassae, pedunculo 10–15 mm. longo; bracteae rotundato-peltatae; baccae rotundatae, stigmate subapicali.—Ecuador: Above Balsapampa, alt. 2,600 meters, *Rimbach* 847 (type in Herb. Field Mus.).

Peperomia Johnstonii Trelease, sp. nov.—Herba modica plus minusve persistente sed obscure molliter pilosa, caule 2–3 mm. crasso; folia alterna elliptico-obovata rotundata vel subacuta, basi acuta, 34 mm. longa 20 mm. lata, in sicco translucente trinervia atque venulosa, petiolo 10–15 mm. longo; inflorescentia non visa.—Guatemala: Volcán de Agua, Dept. Sacatepéquez, *J. R. Johnston* 220 (type in Herb. Field Mus.).

Peperomia Langsdorffii Miq. var. **resacana** Trelease, var. nov.—Planta alta, caulibus gracillimis 1–2 mm. crassis obscuriuscule subvillosis; folia lanceolata utrinque acuta 4–5 cm. longa 1.5–2 cm. lata 5-nervia, petiolo filiformi 5–10 mm. longo.—Brazil: Resaca, Belo Horizonte, State of Minas Gerais, *H. Mello Barreto* 7234 (type in Herb. Field Mus.).

Peperomia santa-helenae Trelease, sp. nov.—Herba majuscula aliquanto caespitosa molliter villosa, caule aliquanto superne geniculato, inferne 2–3 mm. crasso; folia alterna elliptica utrinque subacuta 2–3.5 cm. longa 1–1.5 cm. lata trinervia, in sicco coriacea atque subtus flavescentia, petiolo ca. 5 mm. longo; spicae axillares (propter folia delapsa spurie paniculatae) 50 mm. longae 1 mm. crassae, pedunculo gracili 10–15 mm. longo.—Guatemala: Santa Helena, Dept. Tecpám, *J. R. Johnston* 421 (type in Herb. Field Mus.).

Peperomia Uphofii Trelease, sp. nov.—Herba modice parva rhizomatoso-assurgens glabra, caule gracili vix 2 mm. crasso; folia alterna ovata acuminata, basi subtruncata atque subito breviterque acuta, 3.5–6.5 cm. longa 2.5–5 cm. lata submultiplinervia in sicco tenerrima translucentia, petiolo 2.5 vel in foliis inferioribus 10 mm. longo usque ad basin alato; spicae 1 vel 2 subapicales 100 mm. longae 1 mm. crassae, bracteis rotundato-peltatis; baccae ovoideae, stylo brevi, stigmate apicali.—El Salvador: On wet rocks near San Salvador, *J. C. T. Uphof* (type in Herb. Field Mus.).

Piper corte-scabrum Trelease, sp. nov.—Frutex late divaricatus 5-metralis ubique minute scaber, internodiis superioribus brevibus gracilibus; folia lanceolata vel lanceolato-oblonga acuminata, basi oblique subobtusa, ca. 15 cm. longa atque 5 cm. lata, e 2 tertiis inferioribus pinnatinervia, nervis ca. 5×2, petiolo vix 5 mm. longo; spicae in statu juvenili 15 mm. longae 3 mm. crassae, pedunculo 5 mm. longo.—Mexico: Fortuño, Río Coatzacoalcos, Veracruz, *Llewelyn Williams* 9034 (type in Herb. Field Mus.).

Piper fortunyoanum Trelease, sp. nov.—Frutex glaber vix bimetralis; folia elliptica acuminata basi inaequaliter cordulata 15–20 cm. longa 7–10 cm. lata ubique pinnatinervia, in sicco tenuia, petiolo 2.5–3 cm. longo in tota longitudine alato; spicae juveniles 25 mm. longae 3 mm. crassae apiculatae, pedunculo 5–10 mm. longo. —Mexico: Fortuño, Río Coatzacoalcos, Veracruz, *Llewelyn Williams* 8554 (type in Herb. Field Mus.).

Piper Henscheni C. DC. var. **Barretoi** Trelease, var. nov.—Frutex trimetralis e forma typica foliis fere orbicularibus 11.5 cm. longis 8.5 cm. latis differt; spicae 50 mm. longae 3 mm. crassae, pedunculo 10 mm. longo.—Brazil: Domingos Pisoni, Leopoldina, State of Minas Gerais, *H. Mello Barreto* 7250 (type in Herb. Field Mus.).

Piper oblique-ovatum Trelease, sp. nov.—Frutex ut videtur multiramosus glaber, internodiis superioribus brevibus gracilibus striatis; folia lanceolato-ovata vel saepius late ovata acuta, basi gibboso-cordata, lobo majore petiolum occultante, 10–12 cm. longa 4–6 cm. lata, 5-nervia, petiolo 10 mm. longo; inflorescentia non visa.—Guatemala: Concepción, Dept. Chimaltenango, *J. R. Johnston* 557 (type in Herb. Field Mus.).

Piper perobumbratum Trelease, sp. nov.—*Piper geniculatum* of authors as to Brazil, in part. Frutex glabratus foliis inter *P. exsertum* atque *P. obumbratum* intermedius; folia elliptica vel elongato-elliptica ca. 25–27 cm. longa atque 10 cm. lata, latere longiore basi rotundato vel subcordulato, non in petiolum cuneato-decurrens. —Brazil: Rio de Janeiro, *Pohl* 4772 (type in herb. Mus. Vienna) and 4777.

Piper resacanum Trelease, sp. nov.—Glabra nodosa bimetralis, internodiis brevibus modice gracilibus; folia lanceolata acuta, basi subcuneata, 9–13 cm. longa 3 cm. lata ubique pinnatinervia, nervis primariis ca. 8×2, petiolo 5 mm. longo; spicae 15 mm. longae 3 mm. crassae breviter apiculatae, pedunculo 10 mm. longo; bracteae pallidae, centro obscuro.—Brazil: Resaca, Belo Horizonte, State of Minas Gerais, *H. Mello Barreto* 7251 (type in Herb. Field Mus.).

Piper santa-barbaranum Trelease, sp. nov.—Frutex glaber nodosus trimetralis, internodiis superioribus brevibus gracilibus; folia lanceolato-elliptica 15 cm. longa 5–6 cm. lata, vel reducta lanceolata 12 cm. longa 3 cm. lata, sensim subacuminata, basi aequaliter acuta, e tertio infimo pinnatinervia, nervis 3×2 vel pare obscuro altero adjecto, petiolo 10 mm. longo infra medium vaginato; spicae 45 mm. longae 4 mm. crassae obtusae, pedunculo 7 mm. longo.—Brazil: Santa Barbara, Serra do Caraça, State of Minas Gerais, *H. Mello Barreto* 7244 (type in Herb. Field Mus.).

Piper ubiqueasperum Trelease, sp. nov.—Frutex vix bimetralis ubique minute scabro-pubescens; folia oblonga 18 cm. longa 7 cm. lata, interdum oblongo-subovata atque 20 cm. longa et 8 cm. lata, acuminata, basi oblique obtusa, e medio inferiore pinnatinervia, nervis ca. 5×6, petiolo vix 5 mm. longo; inflorescentia non visa.—Mexico: Fortuño, Río Coatzacoalcos, Veracruz, *Llewelyn Williams* 8902 (type in Herb. Field Mus.).

Piper ubiquescabridum Trelease, sp. nov.—Frutex ca. trimetralis ubique minute scabro-pubescens, internodiis superioribus brevibus gracilibus; folia late elliptica acuminata, basi paullo inaequilateralia, latere breviore rotundato, 18–20 cm. longa 9–10 cm.

lata, e medio inferiore pinnatinervia, nervis 6×2, petiolo ca. 15 mm. longo; spicae 100 mm. longae 3 mm. crassae acutae, pedunculo 15 mm. longo.—Mexico: Fortuño, Río Coatzacoalcos, Veracruz, alt. 30–50 meters, *Llewelyn Williams* 8821 (type in Herb. Field Mus.).

Piper viminifolium Trelease, sp. nov.—Frutex bimetralis nodosus glaber, internodiis brevibus gracilibus; folia anguste lanceolata utrinque longe acuta, 10–16 cm. longa, 1.5–3 cm. lata, ubique pinnatinervia, nervis in sicco flavescentibus vel rubescentibus, petiolo 5 mm. longo; spicae 35–40 mm. longae 3 mm. crassae, pedunculo 5 mm. longo.—Brazil: Botanic Garden, Belo Horizonte, State of Minas Gerais, *H. Mello Barreto* 7248 (type in Herb. Field Mus.).

JUGLANDACEAE

Engelhardtia guatemalensis Standl., sp. nov.—Arbor parva vel alta, ramulis gracilibus elevato-lenticellatis subteretibus, novellis in sicco fusco-brunneis dense brunneo-lepidotis, serius glabratis, ad nodos interdum breviter denseque hirsutis; folia opposita magna petiolata, rhachi gracili lepidota vel fere glabra; foliola vulgo 14 vel 16 anguste lanceolato-oblonga 9–20 cm. longa vel ultra 2.3–5 cm. lata longe angusteque attenuata, basi paullo obliqua acuta, integerrima vel rare serrata, supra viridia ad costam sparse hispidula vel fere omnino glabra, costa nervisque prominentibus vel prominulis, subtus pallida glaucescentia ubique dense minute adpresso-lepidota, petiolulis crassis 2–3 mm. tantum longis.—Guatemala (Dept. Alta Verapaz): Wet forest near Tactic, alt. 1,500 meters, April 5, 1939, *Paul C. Standley* 70477 (type in Herb. Field Mus.), 70507, 70493. Region of Chelac, northeast of Carchá, on the new road to Petén, 1,500 meters, *Standley* 70370, 70379.

It was a great surprise to the writer to discover in the mountains of the Cobán region a tree of the genus *Engelhardtia*. It was still more of a surprise to find the tree very common in the region, one in which so much collecting had been done over a period of many years. It still seems strange that such an observant and discriminating collector as von Tuerckheim should not have collected specimens, but if he did so, they have not come to the writer's attention, and no report has been published of such a tree from the forests of Guatemala.

The available material, unfortunately, is sterile, and it was impossible to discover trees with either flowers or fruits, although many hundreds of individuals were observed along the Petén road

and along the roads at various places in the Tactic region. The trees are easy of recognition, even from a considerable distance, when once noticed, because of the crimson coloring of the young foliage. In this respect they suggest the *amché* (*Rhus striata*) so common in the same region. Moreover, when the foliage is inspected closely, it is so much like that of this highly poisonous tree that it requires considerable courage to touch the leaves. *Rhus*, of course, has alternate, not opposite leaves, but otherwise the leaves, especially in their red coloration, are singularly alike, at least in the field. Several Indians and *ladinos* who were questioned about the tree stated that it was common in Alta Verapaz, but that they knew no local name for it. This is really remarkable in a region where the Kekchí people usually have a name for every insignificant weed.

In America two species of *Engelhardtia* have been known previously, *E. pterocarpa* (Oerst.) Standl., of Costa Rica, and *E. mexicana* Standl., of Tabasco. *E. pterocarpa* differs from the Guatemalan tree in its alternate leaves with less numerous leaflets on long petiolules. The Guatemalan species would be expected, perhaps, to be conspecific with the Tabasco one, but comparison shows that it apparently is fully distinct. In *E. mexicana* the leaflets are on much longer petiolules and are conspicuously rounded on one side at the base. Besides, they are less numerous, and most of them have a small basal lobe that is closely recurved against the lower surface of the blade. It is probable that when the fruit of *E. guatemalensis* is collected, it will be found to afford additional characters.

FAGACEAE

Quercus boquetensis Standl., sp. nov.—Arbor 6–12-metralis, ramulis nigrescentibus glabris lenticellis pallidis elevatis notatis, sat dense foliatis; folia parva breviter petiolata subcoriacea integra, petiolo gracili 2–4 mm. longo glabro; lamina lineari-lanceolata 3.5–7 cm. longa 1–1.5 cm. lata longe sensimque attenuata, basi acuta vel acuminata, utrinque plus minusve lucida, supra in sicco fusca, costa subdepressa, nervis venisque non elevatis, subtus concolor, ad costam gracilem elevatam hinc inde breviter piloso-barbata, aliter glabra, nervis venisque obscuris; pedunculi feminei in axillis superioribus crassi vix ultra 3 mm. longi glabri; cupula breviter late hemisphaerica ca. 15 mm. lata atque 6 mm. alta, squamis multiseriatis triangulari-ovatis obtusis brunnescenti-marginatis dorso dense minute ochraceo-sericeis; glans ovoideo-globosa ca. 12 mm. longa et

aequilata, apice late rotundata et umbonata, ubique dense sericea. —Panama: Open hillside, Boquete, Provincia de Chiriquí, alt. 1,650 meters, June 26, 1938, *Mrs. M.E. Davidson* 780 (type in Herb. Field Mus.).

Quercus Davidsoniae Standl., sp. nov.—Arbor excelsa, ramulis brunneo-fuscis crassis sat dense pilis patentibus sordidis hirsuto-pilosis, internodiis brevibus; folia majuscula breviter petiolata subcoriacea, petiolo crasso 10–14 mm. longo piloso vel glabrato; lamina lanceolato-oblonga vel elliptico-oblonga 14–19 cm. longa 6–7 cm. lata acuminata vel longiacuminata, basin versus paullo angustata, basi ipsa anguste rotundata vel truncata, saepe breviter cordata, supra in sicco fuscescenti-brunnescens glabra sublucida, costa nervisque prominulis, subtus fere concolor, sublucida vel opaca, in statu juvenili plus minusve minute stellato-pilosula, cito glabrata vel fere glabra, costa gracili elevata, nervis lateralibus utroque latere ca. 20 prominentibus rectis angulo semirecto adscendentibus in marginem desinentibus, venulis vix prominulis laxe reticulatis, margine toto remote depresso-serrato; pedunculi feminei ex axillis superioribus nascentes crassissimi ca. 1.5 cm. longi; cupula hemisphaerica magna 4 cm. lata 2 cm. et ultra alta, squamis multiseriatis arcte adpressis triangulari-ovatis anguste acutatis, apice ipso anguste obtuso, dorso densissime ochraceo-sericeis; glans immatura ca. 2.5 cm. alta atque 3 cm. lata, subglobosa, apice fere truncata et profunde depressa subumbonata, primo dense ochraceo-sericea, serius glabrata.—Panama: Boquete, Provincia de Chiriquí, alt. 1,200 meters, July 6, 1938, *Mrs. M.E. Davidson* 864 (type in Herb. Field Mus.).

A handsome addition to the known large-fruited oaks of Central America, and scarcely to be confused with any of the species of this group described and so elegantly illustrated by Trelease in his monograph of American oaks.

MORACEAE

Cecropia orinocensis Standl., sp. nov.—Petiolus (perfectus non visus) ultra 15 cm. longus striatus minute subsparseque puberulo-tomentulosus; lamina crasse membranaca ambitu suborbicularis ca. 35 cm. longa breviter 9-loba, supra in sicco griseo-viridis sat dense scaberula, subtus pallidior brunnescenti-grisea ubique minutissime subadpresse puberulo-tomentella, peltata, lobis latis apice rotundatis vel obtusissimis, costa gracili subtus elevata utroque latere nervos ca. 30 fere rectos vel leviter incurvos graciles prominentes emittente,

venulis crebris transversis parallelis fere rectis; inflorescentia feminea crasse 4.5 cm. longe vel ultra pedunculata, pedunculo glabro vel glabrato, spatha 8.5 cm. longa 1.5 cm. lata abrupte attenuata dense minute puberulo-tomentella; spicae 3–4 sessiles 5–5.5 cm. longae obtusae 5–6 mm. crassae.—Venezuela: Mouth of Río Caño Cárida, humid forest, Río Orinoco, Amazonas Territory, alt. 100 meters, January, 1930, *E. G. Holt & W. Gehriger* 248 (type in U. S. Nat. Herb.).

Vernacular name "yagrumo." Like most species of the genus, this has no particularly noteworthy characters, but thorough study has failed to identify it with any species described or reported from northern South America.

Ficus Davidsoniae Standl., sp. nov.—Arbor 9–18-metralis fere omnino glabra, ramulis crassis, internodiis brevibus vel brevissimis; stipulae caducae triangulari-oblongae ca. 1.5 cm. longae anguste sensim attenuatae rigidae in sicco fuscae glabrae; folia mediocria breviter petiolata coriacea, petiolo crasso 6–9 mm. longo; lamina obovato-oblonga 11–14.5 cm. longa 5–6 cm. lata obtusa, basin obtusam vel anguste rotundatam versus sensim angustata, supra in sicco sublucida, costa elevata, nervis venisque prominulis, subtus concolor, costa crassiuscula elevata, nervis lateralibus utroque latere ca. 15 teneris angulo lato fere recto abeuntibus fere rectis, prope marginem arcuato-conjunctis, aliis tenuioribus parallelis interpositis, venulis prominulis arctissime reticulatis; receptacula sessilia geminata subglobosa fere 1 cm. diam. glabra, involucro bilobo inaequali arcte adpresso fere totum receptaculum involvente, ostiolo parvo elevato.—Panama: Boquete, Provincia de Chiriquí, alt. 1,200 meters, May 20, 1938, *Mrs. M. E. Davidson* 688 (type in Herb. Field Mus.).

The tree is characterized specifically by the rather large, many-nerved, coriaceous leaves of somewhat unusual shape, and by the sessile receptacles with a large involucre which, at least at first, almost completely covers the fruits.

Ficus Lehmannii Standl. Field Mus. Bot. 4: 202. 1929.

Definite locality data were not available when this species was published, but they have now been supplied by Mr. Ellsworth P. Killip from Lehmann's field notes: "Colombia. Grows in open wood formations on the plateau of Popayán, 1,500–1,800 meters. Up to 10 meters high, with a close, round crown. Leaves leathery, dark green, slightly lustrous."

Ficus mattogrossensis Standl., sp. nov.—Arbor alta, ramulis crassiusculis glabris, internodiis brevibus; stipulae ca. 12 mm. longae caducae triangulari-lanceolatae longiattenuatae dorso dense adpresso-pilosae; folia majuscula longipetiolata coriacea, petiolo crassiusculo 3–6 cm. longo glabro; lamina oblanceolato-oblonga vel obovato-oblonga 11–20 cm. longa 4–7 cm. lata apice rotundata, basin versus sensim angustata, basi ipsa acuta vel cuneata, supra in sicco sub-fusco-viridis glabra, nervis non elevatis, subtus pallidior, glabra sed saltem in sicco ubique sat dense minute pallide papillosa, basi tri-nervia vel obscure 5-nervia, costa crassa prominente, nervis lateralibus utroque latere ca. 10 valde obliquis teneris prominentibus pallidis angulo ca. semirecto adscendentibus subarcuatis, juxta marginem arcuato-conjunctis, venulis prominulis arcte reticulatis; receptacula geminata breviter pedunculata ovali-globosa 17–20 mm. longa ca. 15 mm. lata, basi et apice rotundata, dense minute puberulo-tomentella, ostiolo valde prominente ca. 3 mm. lato, pedunculo crassissimo vix 3 mm. longo, involucro bilobo extus subdense adpresso-piloso, lobis latis apice rotundatis ca. 6 mm. longis, intus dense sericeis.—Brazil: Lagoinha, C. Grande, Matto Grosso, caminho para Capão Bonito, September, 1936, *W. Archer & Aug. Gehrt* 61 (type in U. S. Nat. Herb.; duplicate in Herb. Field Mus.).

Ficus zarzalensis Standl., sp. nov.—Arbor, ramulis crassis, novellis pallide cinnamomeis glabris, internodiis brevissimis; stipulae bene evolutae non visae, juvenes ca. 8 mm. longae oblongo-lanceolatae attenuato-acuminatae dense minute scaberulo-tomentellae et dorso adpresso-hirsutae, deciduae; folia mediocria longe petiolata coriacea, petiolo crassiusculo 2–4 cm. longo glabro; lamina obovato-oblonga 8–11 cm. longa 4–5 cm. lata, apice obtusissima vel anguste rotundata, basin versus paullo angustata, basi ipsa anguste obtusa, utrinque glabra, supra in sicco pallide brunnescens, nervis non elevatis, subtus fere concolor, basi trinervia vel obscure 5-nervia, costa crassiuscula elevata, nervis lateralibus utroque latere ca. 7 arcuatis teneris angulo latiusculo abeuntibus prope marginem arcuato-conjunctis, venulis vix prominulis subarcte reticulatis; receptacula geminata breviter pedunculata globosa 1 cm. diam. basi et apice rotundata minute puberula atque scabra, ostiolo elevato, margine incrassato, pedunculo crasso vix ultra 3 mm. longo, involucro bilobo extus glabro, lobis apice late rotundatis ca. 3 mm. longis.—Colombia: Low forest east of Zarzal, Departamento de El Valle, Cauca Valley, 970–1,050 meters, July, 1922, *F. W. Pennell*, *E. P. Killip & T. E. Hazen* 8391 (type in U. S. Nat. Herb.; fragment in Herb. Field Mus.).

Trophis nubium Standl., sp. nov.—Frutex vel arbor 3–6-metralis, ramulis gracillimis subflexuosis brunneis vel brunnescentibus minute puberulis vel glabris, internodiis brevibus plerumque 1–2 cm. longis; stipulae deciduae anguste triangulares 3 mm. longae sparse breviter pilosulae; folia breviter petiolata crasse membranacea, petiolo gracili 6–9 mm. longo minute puberulo vel glabro; lamina lineari-lanceolata 8–14 cm. longa 1.5–2.5 cm. lata longissime angustissime attenuato-acuminata, acumine fere lineari usque 2.5 cm. longo obtuso, basi obtusa vel subacuta, glabra, costa supra impressa, nervis venisque vix prominulis, subtus fere concolor, costa tenera elevata, nervis lateralibus utroque latere ca. 15 angulo lato abeuntibus prominentibus tenerrimis, venulis prominulis arcte reticulatis, margine toto saltem supra tertiam inferiorem argute serrato; racemi feminei axillares pauciflori laxi breviter pedunculati pedunculo incluso ca. 2 cm. longi usque 10-flori, rhachi dense minute tomentella, pedicellis crassiusculis ca. 2–3 mm. longis; fructus juvenilis ovali-globosus ca. 4 mm. longus basi rotundatus minutissime sparse sericeus vel glabratus; styli rami filiformes 3–5 mm. longi puberuli. —Guatemala: Second-growth thicket, Volcán de Zunil, Dept. Quezaltenango, alt. 1,650 meters, August 3, 1934, *Alexander F. Skutch* 925 (type in Herb. Field Mus.). In forest, Volcán de Atitlán, Dept. Suchitepéquez, alt. 2,190 meters, October, 1934, *Skutch* 1511.

The narrow leaves at once distinguish this from all other Central American and Mexican species of *Trophis*.

LORANTHACEAE

Dendrophthora guatemalensis Standl., sp. nov.—Frutex parasiticus aphyllus sat dense ramosus glaber 17 cm. altus et ultra, ramis crassiusculis rigidis fragilibus teretibus, internodiis 7–15 mm. longis in sicco longitrorsum rugosis flavidis dense minutissime tuberculatis, squamis vix 1 mm. longis apice rotundatis; inflorescentiae axillares breviter crasseque pedunculatae 1–3-articulatae, spicis femineis vulgo articulo 1-floro terminatis, flore arcte sessili trimero; sepala 3 clausa late triangularia obtusa.—Guatemala: Mountain slopes above Finca Seamay, Alta Verapaz, February 14, 1939, *C. L. Wilson* 204 (type in Herb. Field Mus.).

Phoradendron Davidsoniae Standl., sp. nov.—Frutex parasiticus omnino glaber ramosus, ramis suberectis subteretibus vel obscure compressis in sicco fuscis vel brunnescentibus, internodiis 2–3 cm. longis; cataphylla basi tantum rami inserta adpressa 4–5 mm. longa; folia inter minora fere sessilia crasse coriacea lineari-oblanceolata 3–6.5 cm. longa 5–11 mm. lata obtusa, basin versus sensim anguste attenuata, basi petioliformi, obscure trinervia; spicae breviter pedunculatae in axillis solitariae 1.5–3 cm. longae 3–4 mm. crassae 3–4-articulatae, articulis subclavatis vulgo 4-floris, floribus 4-seriatis; fructus subglobosus ut videtur albus 4 mm. diam. laevis. —Panama: Boquete, Provincia de Chiriquí, alt. 1,140 meters, June 24, 1938, *Mrs. M. E. Davidson* 740 (type in Herb. Field Mus.). Volcán de Chiriquí, Provincia de Chiriquí, July, 1938, *Davidson* 923.

POLYGONACEAE

Coccoloba Zernyi Standl., sp. nov.—Frutex, ramulis gracillimis subteretibus dense puberulis vel strigillosis, internodiis ut videtur brevibus; ochreae (e parte superiore ramuli tantum visae) vix ultra 2 mm. longae laxae dense strigosae parum obliquae; folia parva breviter petiolata coriacea, petiolo gracili ca. 5 mm. longo paullo strigoso; lamina ovata vel oblongo-ovata 4–5.5 cm. longa 1.7–2.5 cm. lata breviter sensim acuminata, basi obtusa, supra in sicco fusco-brunnescens sublucida ad costam prominentem sparse pilosula, aliter glabra, nervis venisque vix manifestis, subtus fere concolor sparse minute patenti-pilosula, costa gracili elevata, nervis lateralibus utroque latere ca. 10 tenerrimis prominulis arcuatis angulo fere recto adscendentibus, venulis vix manifestis; spicae paniculatae graciles usque 11 cm. longae flexuosae laxe fere ad basin multiflorae ca. 3 mm. latae, rhachi dense minute patenti-pilosa, floribus solitariis, pedicellis filiformibus glabris ochreolam vix aequantibus vel interdum fere duplo longioribus, ochreolis tenuibus brunnescentibus membranaceis strigillosis 1–1.5 mm. longis; sepala ovali-ovata 1.3 mm. longa ad anthesin patentia obtusa extus puberula.—Brazil: Amazonas, in secondary forest at the foot of the highlands, Taperinha, near Santarem, August 13, 1927, *H. Zerny* 890 (type in Herb. Field Mus.).

Noteworthy for the small and neat leaves, and the abundant, laxly paniculate, long and slender racemes.

NYCTAGINACEAE

Torrubia parvifolia Standl., sp. nov.—Frutex vel arbor, ramulis crassiusculis primo minute subdense ferrugineo-tomentellis, cito glabratis, brunneo-fuscis, subteretibus, internodiis brevibus; folia parva breviter petiolata rigide coriacea opposita vel ternata, petiolo vix ultra 2 mm. longo ferrugineo-tomentello vel glabrato; lamina anguste elliptica, oblongo-ovata vel rare rotundato-elliptica 1.5–2.5 cm. longa 7–12 mm. lata obtusa vel acutata, apice ipso obtuso, basi saepe subobliqua obtusa vel subacuta, lucida, costa supra gracillima prominente, nervis obsoletis, subtus in sicco brunnescens, costa vix prominulo, nervis venisque obsoletis, margine plus minusve revoluto; inflorescentia (bene evoluta non visa) parva capituliformis 6–7 mm. longe pedunculata ca. 6-flora, pedunculo ferrugineo-tomentello vel glabrato, floribus sessilibus vel subsessilibus; perianthium ca. 2 mm. longum anguste campanulatum glabratum.—Brazil: Alto da Serra, São Paulo, *Mansueto Koscinski* 162 (Herb. Secc. Bot. Inst. Biol. S. Paulo 31062, type; fragment in Herb. Field Mus.).

An unusually well marked species, easy of recognition because of the very small and lustrous, coriaceous leaves.

CARYOPHYLLACEAE

Arenaria Quirosii Standl., sp. nov.—Herba ut videtur erecta, caespitosa(?), caulibus crassiusculis simplicibus rectis dense foliatis usque 6 cm. tantum altis dense pilis brevibus albidis patentibus hirtellis, internodiis brevibus; folia parva sessilia vel in petiolum brevissimum contracta late elliptica herbacea 3–4 mm. longa apice obtusa vel obtusissima atque acuminato-apiculata, basi breviter angustata, supra dense breviter patenti-pubescentia, subtus saltem ad costam breviter pubescentia, 1-nervia; flores axillares singuli, pedicellis folia aequantibus vel paullo longioribus dense hirtellis; sepala 2.5–3.5 mm. longa lanceolato-oblonga vel oblongo-ovata subulato-acuminata pallido-marginata viridi-carinata dorso patenti-pubescentia; petala ut videtur nulla; semina ovali-globosa lucidissima 0.7 mm. longa atro-ferruginea fere laevia.—Costa Rica: Faldas del Volcán de Irazú, September 15, 1938, *Manuel Quirós C.* 812 (type in Herb. Field Mus.).

It is strange that such a distinct plant as this, growing in a region visited by almost all botanists who have worked in Costa Rica, should have been overlooked, but perhaps its diminutive size is responsible for the oversight. It is not similar to any of the few species known previously from Central America.

RANUNCULACEAE

Thalictrum panamense Standl., sp. nov.—Herba erecta elata 60–120 cm. alta, caulibus teretibus gracilibus brunnescentibus atque glaucescentibus glabris, internodiis solemniter elongatis; folia sat magna, superiora longiuscule petiolata, basalia non visa, rhachibus gracillimis glabris vel microscopice puberulis; foliola numerosa parva membranacea ca. 2 mm. longe petiolulata rhombico-flabellata plerumque 8–17 mm. longa atque 5–12 mm. lata epeltata basi rotundata vel obtusa, vulgo breviter trilobata, rare subintegra vel 5-crenata, supra intense viridia minutissime puncticulata, subtus glauca glabra vel sparse minutissime puberula, venis reticulatis sed vix elevatis; inflorescentia foliata ampla, pedicellis fructiferis ca. 2 cm. longis filiformibus; achaenia 4–5 mm. longa oblique fusiformia compressa incrassato-marginata glabra basi acuta atque obliqua, apice acuta atque breviter rostrata, utrinque insigniter tricostata, stylis filiformibus usque 8 mm. longis.—Panama: Boquete, Prov. Chiriquí, alt. 1,350 meters, June 26, 1938, *Mrs. M. E. Davidson* 791 (type in Herb. Field Mus.).

This is apparently the only species of *Thalictrum* thus far collected in the mountains of Panama. The single Costa Rican species, *T. Lankesteri* Standl., has more or less peltate and much broader leaflets.

MENISPERMACEAE

Disciphania cardiophylla Standl., sp. nov.—Caulis gracilis striatus pilis rigidulis patentibus pilosus, internodiis elongatis; folia majuscula longipetiolata herbaceo-membranacea, petiolo gracili ca. 5 cm. longo sparse hirsuto; lamina late cordato-ovata 6.5–10 cm. longa 4.5–7 cm. lata, apice abrupte breviter cuspidato-acuminata, acumine usque 8 mm. longo, basi breviter aperte cordata, in sicco nigrescens, supra lucida sparse saltem ad costam hirsuta, subtus ubique sat dense hirsuta, e basi 7-nervia, venis utrinque prominentibus gracilibus laxe reticulatis; racemi masculi axillares solitarii vel geminati gracillimi usque 7 cm. longi sat dense pilis brevibus pilosi, floribus numerosis remotis sessilibus, bracteis minutis subulatis; perianthium extus sparse breviter pilosum, sepalis basi cupuliformiconjunctis ca. 2.5 mm. longis, parte libera oblongo-ovata stellatim patente vel subrecurva intus glabra; stamina 3.—Mexico: Coscomatepec, Veracruz, May 10, 1937, *E. Matuda* 1335 (type in herb. Univ. Michigan; fragment in Herb. Field Mus.).

Most species of the genus are South American, and the group has been recorded from Mexico only recently. *D. mexicana* Bullock (Kew Bull. 388. 1936), of the State of Mexico, differs from the present species in having deeply lobate leaves.

Hyperbaena brunnescens Standl., sp. nov.—Frutex scandens, ramis crassis teretibus dense molliterque pilis patentibus aureobrunneis longiusculis pilosis, internodiis brevibus vel aliquanto elongatis; folia majuscula longipetiolata subcoriacea, petiolo 4–6.5 cm. longo gracili vel crassiusculo apice incrassato; lamina ovata vel lanceolata 13–16 cm. longa 5–8 cm. lata anguste acuminata, basi subtruncata, late rotundata vel interdum tantum obtusa, supra in sicco lucida fusca fere omnino glabra, nervis subimpressis, subtus fere concolor brunnescens ubique dense pilis patentibus aureobrunneis brevibus molliter pilosa, basi 5-nervia, nervis elevatis gracilibus, costa superne utroque latere nervos secundarios 1–2 emittente, venis prominulis transversis distantibus subparallelis; cetera ignota.—Guatemala: Near Puerto Barrios, Dept. Izabal, in wet thicket, at sea level, April–May, 1939, *Paul C. Standley* 73091 (type in Herb. Field Mus.). Also No. 73040 from the same locality.

During the past few years so many species of *Hyperbaena* have been described from Mexico and Central America that more would scarcely be expected there, but it may be that some are very local in distribution. The present species is better marked than many of the others, being easy of recognition because of the palmately nerved leaves, covered beneath with a characteristic, dense, golden-brown pubescence.

CAPPARIDACEAE

Steriphoma clara Standl., sp. nov.—Frutex 1–2-metralis pauciramosus, ramis crassiusculis subteretibus dense tomento brunneo stellato subadpresso indutis, internodiis brevibus vel elongatis; folia longipetiolata membranacea, petiolo gracili tereti 4–9 cm. longo sparse vel dense stellato-tomentello; lamina oblongo-elliptica, interdum obovato-elliptica, 8–16 cm. longa 3.5–7 cm. lata acuta vel subabrupte acuminata, apice ipso filiformi-producto, basi obtusa vel anguste rotundata, supra saltem in statu adulto glabra opaca, subtus vix pallidior ubique pilis parvis stellatis pallidis sat dense conspersa vel interdum glabrata; inflorescentia racemosa terminalis dense multiflora ca. 17 cm. longa atque basi 5.5 cm. lata, bracteis caducis filiformibus elongatis, pedicellis erectis plerumque 2.5–3.5 cm. longis tomento coccineo stellato adpresso dense obtectis; calyx campanulatus 1.5 cm. longus basi rotundatus tomento aurantiacococcineo stellato densissime obtectus, lobis late ovatis obtusis ca. 5 mm. longis; petala pallide lutea anguste oblonga obtusa breviter e calyce exserta extus dense adpresseque stellato-tomentella; filamenta longiexserta pallida viridia, antheris 7 mm. longis.—Guate-

mala: Thickets near Nueva Linda, halfway between Retalhuleu and Champerico, Dept. Retalhuleu, alt. 120 meters, February 26, 1939, *Paul C. Standley* 66552 (type in Herb. Field Mus.).

The genus *Steriphoma,* most of whose few species are South American, has not been found previously north of Panama, in southern Darién, where, so far as I know, it has been collected but once. The Panama species, *S. macrantha* Standl., differs from the Guatemalan one in having substantially larger flowers.

Steriphoma clara is a handsome and exceptionally showy plant. I had never before seen the genus growing, and when plants were seen, distributed abundantly in thickets over the plains toward Champerico, it was assumed that they represented some species of *Combretum,* the spirelike racemes with their orange-red color having at a short distance almost the same appearance as those of *Combretum Cacoucia,* except for their lighter and brighter coloring.

SAXIFRAGACEAE

Jamesia americana Torr. & Gray, Fl. N. Amer. 1: 593. 1840.

In the United States this handsome shrub has a wide range, from New Mexico and Arizona northward to Wyoming, but no Mexican specimens were found when manuscript was prepared for the *Trees and Shrubs of Mexico.* A single Mexican collection, altogether typical, has come to hand recently: Salto Canyon, Babicora, Chihuahua, July, 1937, *Harde LeSueur* 1265.

LEGUMINOSAE

Astragalus Gentryi Standl., sp. nov.—Herba ut videtur annua prostrata e basi laxe ramosa, caulibus gracilibus ad anthesin ca. 15 cm. longis sparse pilis albis brevibus rigidulis adpressis strigillosis, internodiis paucis brevibus vel elongatis; stipulae ca. 3 mm. longae e basi anguste triangulari longiattenuatae suberectae virides albomarginatae; folia parva ca. 1 cm. longe petiolata, rhachi ca. 2.5 cm. longa sparse adpresso-pilosa, foliolis subremotis ca. 15 crassiusculis brevissime petiolulatis ovalibus vel obovato-ovalibus 3–6 mm. longis 2.5–3.5 mm. latis apice late breviter emarginatis, basi rotundatis vel cuneato-obtusis, supra subglaucescentibus glabris, subtus concoloribus sparse pilis brevibus albis strigillosis; racemi axillares graciliter usque 6.5 cm. longe pedunculati laxi 1–2 cm. longi ca. 8-flori, pedicellis vix ultra 1 mm. longis, bracteis lineari-subulatis pedicellis vix longioribus; calyx tubulosus extus dense albo-strigosus, tubo ca. 4 mm. longo basi acutiusculo vel obtuso atque paullo obliquo

1.5 mm. lato, dentibus subaequalibus 1–1.5 mm. longis lineari-subulatis erectis; corolla ut videtur intense violacea ca. 8 mm. longa, vexillo extus glabro angulo fere recto refracto.—Mexico: San Bernardino, Río Mayo, Sonora, in an arroyo among rocks, February, 1935, *Howard Scott Gentry* xo (type in Herb. Field Mus.).

Brongniartia Rozynskii Standl., sp. nov.—Frutex, ramulis gracilibus dense foliatis viridescentibus subteretibus puberulis vel pilis brevissimis subsparse strigillosis, internodiis brevibus; stipulae caducae membranaceae viridescentes ovatae vel lanceolato-ovatae acutae vel acuminatae sparse strigillosae; folia parva 6–8 cm. longa breviter petiolata, rhachi gracillima puberula vel strigillosa, foliolis breviter petiolulatis ca. 21 anguste oblongis 4–8 mm. longis plerumque 2–2.5 mm. latis, apice rotundatis atque apiculato-mucronatis, basi obtusis, utrinque strigillosis, costa supra impressa, nervis venisque utrinque prominulo-reticulatis, marginibus subrevolutis; flores axillares singuli, pedunculis filiformibus 1.5–2 cm. longis vel paullo ultra sparse adpresso-pilosulis; bracteolae 8 mm. longae membracaceae ovatae acutae virides ciliatae sed aliter glabrae caducae, basi rotundatae vel subcordatae; calyx 1 cm. longus extus glaber, tubo late campanulato basi acutiusculo, lobis tubo paullo longioribus lanceolatis longe attenuatis ciliatis.—Mexico: Region of Jaumave, Tamaulipas, in 1932, *H. W. von Rozynski* 524 (type in Herb. Field Mus.).

Brongniartia tenuifolia Standl., sp. nov.—Frutex sparse ramosus 1–2-metralis glaberrimus, ramis gracilibus sed rigidis, vetustioribus sordido-brunnescentibus, novellis stramineis vel viridibus subteretibus, internodiis elongatis; stipulae persistentes crasse coriaceae oblique lateque triangulari-ovatae vel ovali-ovatae 1.5–2 cm. longae atque fere aequilatae apice rotundatae vel obtusae et apiculatae palmatinerviae reticulato-venosae; folia magna usque 22 cm. longa et ultra breviter petiolata, rhachi gracili sed rigidiuscula, petiolulis plerumque ca. 3 mm. longis; foliola ca. 23 anguste oblonga vel oblanceolato-oblonga 2–3.5 cm. longa 4–6 mm. lata, apice acuta vel subobtusa et longe spinuloso-mucronata, basi acuta vel attenuata, glaucescenti-viridia, costa utrinque prominula, venis utrinque prominulis atque arcte reticulatis; flores axillares singuli, pedunculis fructiferis 3.5–4 cm. longis erectis rigidis; calyx perfectus non visus, tubo ut videtur late campanulato; legumen glabrum, ovulis ut videtur ca. 3, ca. 4 cm. longum atque 13 mm. latum, basi angustatum atque stipitatum, apice subacutum et breviter rostratum; semina late ovalia subcompressa laevia viridescentia 7 mm. longa.—Mexico:

Movas, Río Yaqui, Sonora, on open hills, April 28, 1937, *Howard Scott Gentry* 3046 (type in Herb. Field Mus.).

The flowers are described as yellow, but none are present on the type specimen. The species is a well marked one, noteworthy for the large, leathery, persistent stipules, and for the numerous narrow, rigid, spine-tipped leaflets, which in form simulate leaves of the genus *Jacquinia*.

Clitoria velutina Standl., sp. nov.—Frutex 0.6–1.5 m. altus, ramis crassiusculis teretibus ubique dense breviter patenti-pilosis, sat dense foliatis; folia modica longipetiolata trifoliolata, rhachi ca. 1.5 cm. longa dense patenti-pilosa; stipulae viridescentes 7–8 mm. longae attenuatae striatae pilosae, stipellis conformibus; foliola membranacea 4 mm. longe petiolulata lanceolato-oblonga vel ovato-oblonga plerumque 6–7 cm. longa atque 2–3 cm. lata, lateralia paullo minora, acuminata vel longiacuminata, basi rotundata atque interdum subemarginata, supra viridia fere omnino glabra, venulis arctissime reticulatis perspicuis prominulis, subtus pallidiora ubique dense pilis longiusculis velutino-pilosa, nervis lateralibus utroque latere ca. 9 obliquis angulo semirecto vel angustiore adscendentibus; inflorescentiae axillares racemosae capituliformes pauciflorae foliis duplo breviores vel interdum paullo longiores, rhachi dense pilosa, floribus breviter pedicellatis, bracteis bracteolisque stipulis similibus sed longioribus; calyx 13 mm. longus tubuloso-campanulatus ore 5 mm. latus dense pilis longis mollibus albidis patentibus pilosus, lobis erectis deltoideo-ovatis 3 mm. longis acuminatis viridescentibus; vexillum 2.5 cm. longum 12 mm. latum emarginatum extus breviter sparseque pilosum; legumen 4 cm. longum 7 mm. latum sessile glabrum subobtusum et rostrato-apiculatum, basi angustatum.—Panama: In savanna, Boquete, Prov. Chiriquí, alt. 1,500 meters, June 26, 1938, *Mrs. M. E. Davidson* 784 (type in Herb. Field Mus.).

"Flower white, the center streaked with dark red." Outstanding among the erect, shrubby species because of the abundant, soft, velvety pubescence covering most parts of the plant.

Crotalaria sonorensis Standl., sp. nov.—Herbacea vel suffruticosa metralis ramosa, ramis crassiusculis teretibus ubique dense adpresso-pilosis, internodiis elongatis; folia modica, petiolo 3–6 cm. longo crassiusculo dense sericeo; foliola 3 crasse membranacea brevissime petiolulata subaequalia oblonga vel elliptico-oblonga 2.5–7 cm. longa 0.7–2.7 cm. lata obtusa vel interdum acuta, basi vulgo cuneato-acuta vel subobtusa, supra viridia sed sat dense sericea, subtus vix pallidiora densius sericea; racemi axillares et terminales ut videtur remote multiflori pedunculo incluso usque 35 cm. longi, rhachi sat dense pilis brevibus adpressis vel subpatentibus pilosa striata, bracteis lineari-filiformibus viridibus 3–4 mm. longis persistentibus patentibus, pedicellis fructiferis ca. 5 mm. longis superne incrassatis dense adpresso-pilosis; calyx sub fructu persistens ca. 8 mm. longus extus dense sericeus, tubo late campanulato brevi, lobis acutis vel longiacuminatis valde inaequalibus tubo plus quam duplo longioribus; legumen in sectione longitudinali obovato-oblongum 1.5–2 cm. longum 8 mm. latum, apice late rotundatum atque longirostratum, basi obtusum et breviter stipitatum, ubique densissime pilis brevibus pallidis arcte adpressis sericeum.—Mexico: Quirocoba, Río Fuerte, Sonora, on oak slope, October 22, 1936, *Howard Scott Gentry* 2948 (type in Herb. Field Mus.).

In Senn's recent monograph of the North American species of *Crotalaria* (Rhodora 41: 317. 1939) this Sonoran plant seems to run at once to *Crotalaria vitellina* Ker, var. *Schippii* Senn, of southern Mexico and British Honduras. In the quality of its pubescence, however, as well as in other respects it appears to be sufficiently distinct specifically from all forms of the widespread *C. vitellina*.

Dalea Astragalopsis Standl., sp. nov.—Herba perennis ut videtur erecta caespitosa ca. 50 cm. alta, caulibus numerosis gracilibus pauciramosis inferne ferrugineis subteretibus dense adpresso-pilosis, internodiis saepe foliis longioribus; folia 2–3.5 cm. longa breviter petiolata, foliolis approximatis patentibus vel subreflexis; stipulae filiformes ca. 4 mm. longae; foliola ca. 31 oblonga 2.5–6 mm. longa ca. 1.5 mm. lata, apice obtusissima vel leviter emarginata, basi angustata, utrinque sparse glanduloso-punctata et pilis laxis subadpressis vel fere patentibus gracillimis mollibus pilosa, marginibus saepe plus minusve revolutis; pedunculi axillares atque terminales 4.5–9 cm. longi, floribus spicatis arcte sessilibus, spicis densissime multifloris subglobosis vel saepius ovalibus 7–12 mm. longis 7 mm. latis, bracteis ovato-orbicularibus 2–2.5 mm. longis abrupte caudato-acuminatis adpressis ubique longipilosis grosse glanduloso-punctatis; calyx extus prope basin fere glaber, superne praesertim ad dentes pilosus, tubo pallido 2 mm. longo, dentibus inaequalibus 1–1.5 mm. longis subulatis erectis; petala laete caerulea; stamina 9, filamentis longiexsertis.—Mexico: Sierra Canelo, Río Mayo, Chihuahua, growing in scattered clumps on open pine slopes, August 26, 1936, *Howard Scott Gentry* 2479 (type in Herb. Field Mus.).

Dalea Gentryi Standl., sp. nov.—Herba vel suffrutex perennis(?) ramosus, ramis gracillimis striatis sparse minute puberulis vel fere glabris, sparse hinc inde rubido-glandulosis, internodiis saepe foliis longioribus; folia 2–3.5 cm. longa fere sessilia, rhachi sparse minute pilosula, foliolis approximatis, stipulis minutis subulatis; foliola ca. 23 anguste oblonga 5–9 mm. longa 2 mm. lata, apice late rotundata atque saepe leviter emarginata, basi obtusa, supra glabra eglandulosa, subtus sparse obscure pilosula vel ferre omnino glabra sparse glanduloso-punctata; pedunculi terminales et axillares usque 6 cm. longi puberuli, floribus spicatis, spicis 1.5–3 cm. longis basi ca. 6 mm. crassis, sursum sensim attenuatis, densissime multifloris, bracteis lanceolatis subulato-acuminatis dense breviter pilosis erectis; calyx late campanulatus 2–2.5 mm. longus dense breviterque pilosus, dentibus inaequalibus viridibus tubo paullo brevioribus erectis; petala omnia conformia alba angusta 4–5 mm. longa apice anguste rotundata; stamina petalis subaequilonga.—Mexico: Arroyo Hondo, Sierra Charuco, Chihuahua, in canyon bottom among pines, September 12, 1935, *Howard Scott Gentry* 1809 (type in Herb. Field Mus.).

This plant is referable to the group of *Dalea* separated by Rydberg as the genus *Thornbera.* There it seems to be related to *Dalea albiflora* Gray, a widely distributed species of northern Mexico, Arizona, and New Mexico, which differs in its much more abundant pubescence as well as in its thicker and blunt, rather than long-attenuate, flower spikes.

Indigofera macilenta Standl., sp. nov.—Suffrutex 60 cm. altus sparse ut videtur ramosus, ramis gracillimis sparse foliatis sparse vel dense albido-strigosis, internodiis elongatis; stipulae filiformes minutae; folia parva petiolata, rhachi usque 1 cm. longa strigosa; foliola vulgo 5, interdum 3, membranacea, lateralia breviter petiolulata, terminalia usque 8 mm. longe petiolulata, lanceolato-oblonga usque subovalia 7–15 mm. longa 3–5 mm. lata obtusa vel acuta, interdum subemarginata, mucronulata, basi obtusa vel anguste rotundata, prope vel paullo infra medium latissima, supra subsparse adpresso-pilosa, subtus dense strigosa; racemi axillares pedunculo longissimo incluso usque 15 cm. longi, laxe pauci- vel multiflori, parte florifera ad 3 cm. longa apicem versus longe attenuata, bracteis calyci aequilongis vel eo duplo brevioribus, pedicellis vix ultra 1 mm. longis; calyx 2–2.2 mm. longus dense strigosus fere ad basin partitus, segmentis lineari-subulatis erectis; corolla 5–6 mm. longa, vexillo extus sparse adpresso-piloso; ovarium sparse strigosum lineare longirostratum.—Mexico: Guasaremos, Río Mayo, Chihuahua, on oak hills, July 27, 1936, *Howard Scott Gentry* 2335 (type in Herb. Field Mus.).

"Flowers orange-red, the banner faint yellow aurora at the base; wings with an irregular touch of purple; keel white to lavender."

Inga subvestita Standl., sp. nov.—Arbor parva, ramulis brevibus subgracilibus nodosis, novellis dense pilis longis patentibus sordido-brunneis hispidis; folia parva 4-6-foliolata breviter petiolata, foliolis 10-13 mm. distantibus, petiolo dense hispido late alato, rhachi inter foliola late alata 3-4 mm. lata; foliola membranacea oblongo-obovata vel elliptico-oblonga, superiora 5-9 cm. longa et 2-4 cm. lata, inferiora multo minora, omnia acuta vel acuminata, rare obtusa, basi oblique cuneato-acuta vel subobtusa, supra vix lucida sparse pilis aureo-brunneis patentibus hispida, longiciliata, subtus concoloria paullo densius hispida; flores spicati, spicis axillaribus vel e nodis defoliatis nascentibus laxe multifloris vel paucifloris 2-3.5 cm. longe pedunculatis, ca. 3.5 cm. longis, floribus sessilibus, rhachi dense brunneo-hispida, bracteis viridescentibus lineari-subulatis 2-3 mm. longis persistentibus, post anthesin patentibus vel subreflexis; calyx ca. 3 mm. longus subsparse pilis longis rufidulis patentibus hispidus, tubo angusto subfusiformi, dentibus tubo fere duplo brevioribus lanceolato-subulatis attenuatis erectis; corolla striata subsparse hispida ca. 12 mm. longa, lobis suberectis ovatis acutis 2.5 mm. longis; stamina ca. 2.5 cm. longa.—Guatemala: In virgin forest above Finca Transvaal, Alta Verapaz, alt. 600 meters, March 15, 1939, *C. L. Wilson* 315 (type in Herb. Field Mus.).

Unusual in the genus because of the small leaflets and the abundant pubescence of long, spreading, golden brown hairs found on almost every part.

Mimosa callithrix Standl., sp. nov.—Frutex bimetralis, ramis gracilibus striato-angulatis subdense puberulis aculeis paucis remotis recurvis 1.5-2 mm. longis armatis; stipulae filiformes 5 mm. longae et ultra puberulae; folia modica longipetiolata, rhachi 3.5-7 cm. longa gracillima sulcata sparse puberula aculeolis paucis minutis recurvis armata; pinnae 3-4-jugae, rhachi 2.5-4.5 cm. longa minute puberula inermi; foliola 6-11-juga oblonga vel anguste oblonga 6-12 mm. longa 2-3 mm. lata obtusa et breviter apiculata, basi valde obliqua, brevissime petiolulata, binervia, in statu juvenili sparse breviter adpresso-pilosa, cito glabrata; flores spicati, spicis axillaribus ad nodos geminatis ca. 7.5 cm. longis et 2 cm. longe pedunculatis, laxe multifloris, floribus sessilibus vel subsessilibus, rhachi dense sordido-puberula, bracteis minutis; calyx late campanulatus 1.5 mm. longus dense breviter pilosus, dentibus brevissimis; corolla dense puberula 3 mm. longa, lobis ovatis acutis vel acuminatis; stamina numerosa lobis corollae dupla ca. 8 mm. longa.—Mexico: Sierra Charuco, Río Fuerte, Chihuahua, along stream banks in a canyon, alt. 1,500 meters, July 23, 1935, *Howard Scott Gentry* 1531 (type in Herb. Field Mus.).

Mimosa Velloziana Mart.—A widely distributed, unpleasantly armed, woody vine of wide distribution in tropical America, this species is reported by Britton and Rose (N. Amer. Fl. 23: 150. 1928) to extend only as far north as Panama. It has been collected recently by the writer on the Pacific coast of Guatemala, and may be recorded definitely also from Mexico: Fortuño, Río Coatzacoalcos, Veracruz, near sea level, March, 1937, *Llewelyn Williams* 8875. The vernacular name is reported from Veracruz as "rasca petate."

Phaseolus amabilis Standl., sp. nov.—Herba volubilis ramosa, caulibus gracillimis glabris viridibus, internodiis plerumque valde elongatis; stipulae 5–6 mm. longae ovatae vel oblongo-lanceolatae acutae multinerviae persistentes erectae; folia parva longipetiolata, petiolo glabro, petiolulis 2–7 mm. longis; foliola 1.5–4 cm. longa 1–2 cm. lata, plerumque hastato-trilobata, rarius integra, lobo terminali acuto vel acutiusculo lanceolato-oblongo, lobis basalibus apice rotundatis, supra sparse minute puberula, subtus fere concoloria minute sparse puberula vel fere glabra; pedunculi usque 5 cm. longi gracillimi glabri tortuosi 1–3-flori, pedicellis glabris usque 4 mm. longis; calyx glaber 5–6 mm. longus, tubo late campanulato pallido, lobis inaequalibus lanceolato-attenuatis tubo longioribus, posticis anterioribus bene longioribus; corolla purpurea glabra usque 2.5 cm. longa, petalis omnibus inferne quasi in tubum fere 1 cm. longum cohaerentibus.—Mexico: Guasaremos, Río Mayo, Chihuahua, growing on mossy, moist bank with *Achimenes grandiflora*, oak-pine slope, August 26, 1936, *Howard Scott Gentry* 2471 (type in Herb. Field Mus.).

This must be an unusually handsome plant for the genus, because of its delicate habit, neatly lobed leaflets, and exceptionally large, brightly colored flowers.

Phaseolus Gentryi Standl., sp. nov.—Herba volubilis, caule gracili subtereti sparse pilis brunneis brevibus retrorso-piloso, internodiis plerumque foliis longioribus; stipulae multinerviae ca. 4 mm. longae deltoideo-lanceolatae acuminatae erectae persistentes; folia modica longipetiolata, petiolo striato-angulato sparse retrorso-piloso, rhachi 1 cm. longa, petiolulis 2–3 mm. longis dense brunneo-pilosis; foliola integra subaequalia, terminali paullo latiore ovato, lateralibus oblique rhombico-ovatis, omnia acuta usque late obtusa, basi anguste rotundata vel late obliquo-rotundata, supra viridia subsparse breviter adpresso-pilosa, pilis basi bulboso-dilatatis, subtus fere concoloria, sparse pilosa; racemi fructiferi axillares singuli 3.5–7 cm. longe pedunculati 1–1.5 cm. tantum longi nodosi pauciflori, rhachi dense breviter brunneo-pilosa, pedicellis brevissimis incrassatis; calyx ad basin fructus plus minusve persistens sed perfectus non visus; legumen late lineare in statu adulto usque 8 cm. longum atque 7 mm. latum valde compressum, basi subacutum, apice acutum atque breviter curvo-rostratum, glabrum, late marginatum, subarcuatum.—Mexico: Batopilillas, Río Mayo, Chihuahua, in oak and grass savanna, September 8, 1936, *Howard Scott Gentry* 2615 (type in Herb. Field Mus.).

"A vine on open, rocky slope with harsh grasses; flowers lavender."

Phaseolus pachycarpus Standl., sp. nov.—Herba volubilis, caule gracillimo sparse pilis patentibus ex parte glandulosis piloso gracillimo striato-angulato vel subtereti, internodiis brevibus vel elongatis; stipulae persistentes viridescentes ca. 3 mm. longae nervosae acutae vel subobtusae; folia parva longipetiolata, petiolo gracillimo sparse piloso, rhachi 5–10 mm. longa, petiolulis ca. 2 mm. longis dense pilosis, stipellis lineari-lanceolatis viridescentibus petiolulis aequilongis; foliola membranacea subaequalia, terminali paullo majore, ovata vel rhombico-ovata 2–3.5 cm. longa 1–2 cm. lata longe sensimque attenuato-acuminata, basi subtruncata usque cuneato-rotundata, supra viridia subsparse pilis gracillimis subadpressis pilosa, venulis prominulis, subtus concoloria sparse vel dense pilis subpatentibus pilosa, glanduloso-punticulata; racemi fructiferi ca. 4 cm. longe pedunculati, pedunculo crassiusculo, rhachi nodosa 2.5–3 cm. longa crassa, pedicellis incrassatis 8 mm. longis; legumen late lineare versus apicem latissimum rectum crassum 8–12 cm. longum ca. 12 mm. latum, apice acutum atque 1 cm. longe rostratum, basin versus sensim angustatum, sessile.—Mexico: Guasaremos, Río Mayo, Chihuahua, valley margin, September 28, 1936, *Howard Scott Gentry* 2888 (type in Herb. Field Mus.).

Noteworthy for the rather large fruits, which are straight and much thicker, i.e., less compressed, than in most species of the genus.

Phaseolus pauper Standl., sp. nov.—Herba volubilis, caule insigniter gracili tereti viridescente vix ultra 1 mm. crasso sparse puberulo vel pilis brevissimis pilosulo, internodiis valde elongatis; stipulae fere 3 mm. longae striatae triangulari-oblongae acutae erectae persistentes viridescentes; folia majuscula longipetiolata membranacea laete viridia, petiolo gracillimo 4–5 cm. longo, rhachi ca. 1.5 cm. longa puberula, stipellis lineari-subulatis patentibus vel reflexis 2 mm. longis; foliola subaequalia integra, terminali ovato vel late ovato, lateralibus late rhombico-ovatis, 6–8 cm. longa 3–5 cm. lata sensim acuta vel longiacuminata, basi rotundata vel late obliquo-rotundata, e basi trinervia, utrinque sparse vel dense minuteque puberula, venulis utrinque prominulis atque laxe reticulatis; racemi axillares 6–8.5 cm. longe pedunculati laxe 3–5-flori, pedunculo gracillimo patenti-pilosulo, pedicellis gracillimis 5–7 mm. longis patenti-pilosulis, bracteis bracteolisque minutis lanceolatis vel subulatis striatis viridescentibus; calyx valde obliquus 4 mm. longus extus sparse pilosus, labio superiore lato subobtuso, segmentis 3 inferioribus superiore multo longioribus lineari-lanceolatis attenuatis; corolla ut videtur rosea ca. 1 cm. longa, vexillo extus glabro; fructus juvenilis sessilis linearis rectus attenuato-rostratus dense minute viscido-pilosulus ca. 9-ovulatus.—Mexico: Arroyo margin, San Bernardo, Río Mayo, Sonora, September 7, 1935, *Howard Scott Gentry* 1674 (type in Herb. Field Mus.).

Conspicuous characters are the large, broad, thin leaflets, the very slender stems and peduncles, and the few-flowered, lax racemes.

Phaseolus robiniiflorus Standl., sp. nov.—Herba volubilis, caule crassiusculo sparse piloso vel fere glabro tereti viridi, internodiis elongatis; folia modica membranacea, petiolo gracillimo usque 8.5 cm. longo sparse pilosulo vel fere glabro, rhachi ca. 2 cm. longa, stipellis 2–3 mm. longis nervosis viridibus patentibus lanceolato-linearibus vel subulatis, petiolulis 3 mm. longis; foliola integra subaequalia ovata vel late ovata 6–6.5 cm. longa 3–4 cm. lata, longe angusteque attenuato-acuminata, basi late rotundata vel cuneato-rotundata, ad venas nervosque sparsissime laxe pilosula; pedunculi crassiusculi curvi ad 14 cm. longi fere glabri, racemis usque 14 cm. longis densissime multifloris nodosis, pedicellis glabris 5 mm. longis, bracteis caducis striato-nervosis late ovatis acutis ca. 1 cm. longis glabris ciliolatis; calyx pallidus membranaceus ca. 4 mm. longus basi rotundatus, dentibus tubo brevioribus vel subaequilongis sed inferioribus labio superiore paullo longioribus ciliatis rotundato-ovatis; corolla ut videtur purpurea 2 cm. longa, vexillo latissimo extus glabro hinc inde grosse glanduloso-punctato.—Mexico: Río Bonito, Chihuahua, August 25, 1936, *Harde LeSueur* 711 (type in Herb. Field Mus.).

Known, unfortunately, only from rather fragmentary and incomplete material, but apparently a valid species, marked by the long and dense, many-flowered racemes of large flowers.

Phaseolus sonorensis Standl., sp. nov.—Herba volubilis elongata ramosa, caule gracili subtereti ubique dense pilis brevibus patentibus mollibus piloso, internodiis elongatis; stipulae virides adpressae persistentes lanceolato-oblongae 3–4 mm. longae pilosae; folia inter minora 1–2.5 cm. longe petiolata crasse membranacea, petiolo crassiusculo dense patenti-piloso, rhachi ca. 1 cm. longa, petiolulis 2–3 mm. longis densissime pilosis; foliola integra subaequalia late ovata vel latissime rhombico-ovata 2.5–4 cm. longa 1.5–3.5 cm. lata acuta vel rarius obtusa, basi rotundata vel interdum subtruncata, supra in sicco cinereo-viridia sat dense pilis brevibus subpatentibus pilosa, costa nervisque elevatis, subtus fere concoloria ubique dense molliter patenti-pilosa, basi trinervia; pedunculi axillares singuli crassiusculi 5–10 cm. longi, racemis subremote multifloris 3–5 cm. longis, rhachi nodosa dense pilosa, pedicellis 5–8 mm. longis longipilosis, bracteis brevibus alabastris vix aequalibus late ovatis nervosis acutis dense pilosis deciduis; calyx latissime campanulatus ca. 3 mm. longus extus pilosus basi acutiusculus, labio superiore ovato-rotundato, labio inferiore breviter trilobo, lobis rotundato-ovatis apiculatis labio superiore bene brevioribus; corolla ut videtur purpurea 1.5 cm. longa vel ultra, vexillo lato extus glabro; legumen juvenile lineare sessile acutum glabrum, marginibus paullo incrassatis.—Mexico: Sierra Chirivo, Río Mayo, Sonora, on canyon slope, March 8, 1935, *Howard Scott Gentry* 1396 (type in Herb. Field Mus.).

"A large vine, sprawling over herbs and shrubs; abundant." The local name is given as Huirote.

Schrankia heterocarpa Standl., sp. nov.—Herba erecta(?) metralis, caule gracili striato-angulato glabro, aculeis reflexis 1.5 mm. longis sat dense armato, internodiis solemniter elongatis; stipulae filiformes 4 mm. longae; folia sparsa, petiolo gracillimo 3–5 cm. longo dense aculeolato glabro, rhachi gracillima 1.5–2.5 cm. longa inermi vel aculeis paucis brevibus munita; pinnae 3–4-jugae 2.5–4 cm. longae; foliola ca. 11-juga ca. 7 mm. longa et 1.5 mm. lata glabra sed sparse ciliata obtusissima 1-nervia, venulis obsoletis; capitula singula laxe pauciflora, pedunculo 1 cm. longo glabro aculeolis paucis minutis vulgo armato, floribus arcte sessilibus; calyx late campanulatus denticulatus 0.5 mm. longus; corolla glabra angusta 2.2 mm. longa; stamina corolla duplo longiora; legumen immaturum breviter stipitatum lineare valde compressum 3.5 cm. longum 3 mm. latum glabrum, apice breviter attenuato-rostratum, valvis inermibus vel setis paucis longis conspersis, marginibus sparse aculeolis recurvis armatis; ovula ca. 8.—Mexico: In canyon, La Cienaguita, Río Mayo, Chihuahua, September 10, 1936, *Howard Scott Gentry* 2635 (type in Herb. Field Mus.).

"Growing among oaks, on hill slope with a rank growth of herbs. Flowers pink." In the account of this genus (under the name *Leptoglottis*) by Britton and Rose, the present plant would run in the key to *S. Roemeriana* (Scheele) Blankinship, of southern Texas, which has smaller leaflets, longer peduncles, and essentially different fruit.

GERANIACEAE

Geranium charucanum Standl., sp. nov.—Herba ramosa 50 cm. alta vel ultra, caulibus gracilibus sparse vel dense pilis brevibus pallidis strigosis, internodiis solemniter elongatis; stipulae lanceolatae ca. 6 mm. longae erectae viridescentes strigosae; folia basalia non visa, caulina longipetiolata vel superiora sessilia vel subsessilia, petiolo usque 8 cm. longo gracillimo strigoso; lamina ad basin trisecta, segmentis lateralibus interdum bipartitis, omnibus linearibus vel lanceolato-linearibus 3–5 cm. longis longiattenuatis, basi angustatis, laciniato-lobatis, interdum tantum remote inciso-dentatis, supra sparse strigillosis, subtus ad nervos sparse strigosis; pedunculi biflori usque 10 cm. longi gracillimi, bracteis lineari-lanceolatis 5–6 mm. longis, pedicellis gracilibus 3–5 cm. longis dense griseo-strigosis; sepala lanceolato-ovata 10–11 mm. longa acuminata apice appendice 2–2.5 mm. longo subulato aucta, dense strigosa, pallido-marginata; petala ut videtur laete purpurea rotundato-obovata 18 mm. longa atque 12 mm. lata, apice late rotundata et subemarginata, glabra sed prope basin longiciliata; filamenta inferne sparse pilosa, antheris 2 mm. longis.—Mexico: Sierra Charuco, Río Fuerte, Chihuahua, riparian, September 13, 1935, *Howard Scott Gentry* 1813 (type in Herb. Field Mus.).

"Scattered and infrequent. Flowers purple." In general appearance the plant, especially because of its large and showy flowers, bears much resemblance to some species of the malvaceous genus *Callirrhoe*.

ERYTHROXYLACEAE

Erythroxylon fiscalense Standl., sp. nov.—Frutex 1.5–3 m. altus dense ramosus, ramis subteretibus fusco-ferrugineis rigidis vel junioribus plus minusve tortuosis, brevioribus saepe spiniformibus, lenticellis numerosis pallidis parvis subelevatis conspersis, glabris, internodiis brevibus vel paullo elongatis; stipulae ovatae acutae glabrae persistentes ca. 2 mm. longae; folia parva breviter petiolata subcoriacea glabra, petiolo gracili tereti ca. 2 mm. longo; lamina orbicularis vel obovato-rotundata 6–12 mm. longa et fere aequilata apice late rotundata, basi late obtusa, supra in sicco viridis, costa nervisque non elevatis, subtus paullo pallidior, costa gracili prominente, nervis venisque obsoletis vel obscuris; flores non visi. Guatemala: Dry, rocky thicket, Fiscal, Dept. Guatemala, alt. about 1,100 meters, December 12, 1938, *Paul C. Standley* 59568 (type in Herb. Field Mus.).

Although the specimens are sterile, it is evident that they represent a species quite different from any other known in Central America. The leaves are smaller than those of other Central American species, and are distinguished also by their orbicular or rounded-obovate outline.

EUPHORBIACEAE

Acalypha anadenia Standl., sp. nov.—Ut videtur herbacea, ramosa, decumbens(?), caulibus gracilibus pallide viridibus dense incurvo-pilosulis atque sparse longipilosis, pilis tenerrimis usque 5 mm. longis patentibus, internodiis elongatis; stipulae persistentes lineari-subulatae viridescentes ca. 2 mm. longae; folia inter minora longipetiolata membranacea, petiolo gracillimo 1.5–3 cm. longo dense incurvo-pilosulo; lamina lanceolato-ovata 3–8 cm. longa 1.5–3.5 cm. lata acuminata vel sensim longiacuminata, basi late cuneato-obtusa vel cuneato-rotundata, fere ad basin crenata, supra viridis, ad venas sparse incurvo-pilosula, aliter glabra, subtus fere concolor puncticulato-papillosa, ubique sat dense pilis brevibus saepe incurvis pilosula, e basi palmatim 5-nervia, costa utroque latere nervos ca. 3 emittente; spicae terminales androgynae pedunculatae ca. 2.5 cm. longae atque 1.5 cm. latae, lateralibus superioribus femineis subglobosis vix ultra 1 cm. longis usque 1.5 cm. longe pedunculatis, masculis axillaribus pedunculatis gracilibus usque 4 cm. longis vix 1.5 mm. crassis; axis spicae femineae saepe supra bracteam summam capillaceo-productus et florem femineam rudimentariam gerens; bracteae femineae 1–1.5 cm. longae ultra medium partitae, laciniis rigidis setaceo-acuminatis albido-pilosis et sparse glanduloso-ciliatis; ovarium sparse pilosum; semina pallide brunnescentia minutissime puncticulata fere laevia.—Mexico: Rocky headland in front of Hotel Mirador, Acapulco, Guerrero, alt. 90 120 meters, August 21, 1935, *L. H. MacDaniels* 150 (type in Herb. Field Mus.). Rocky headlands between Acapulco and Pie de la Cuesta, Guerrero, alt. 45–60 meters, August 24, 1935, *MacDaniels* 214.

The relationship appears to be with *A. aristata* HBK., a species of Colombia and Panama.

Acalypha Gentryi Standl., sp. nov.—Frutex 2–3-metralis, ramulis gracilibus teretibus subferrugineis, novellis fulvido-tomentulosis vel puberulis atque pilosulis, internodiis elongatis; stipulae lineari-attenuatae usque 10 mm. longae hispidulae deciduae; folia mediocria longipetiolata membranacea, petiolo gracillimo 1.5 4.5 cm. longo dense minute adpresso-pilosulo et sparse hirtello; lamina late ovata vel rotundato-ovata 6–10 cm. longa 4–7 cm. lata abrupte breviterque acuminata, basi late rotundata vel saepe subcordata, supra viridis ubique minutissime albido-puncticulata, hinc inde praesertim ad venas costamque breviter hirtella, subtus fere concolor sat dense molliter pilosula vel serius glabrata, e basi 5-nervia, nervis lateralibus utroque latere ca. 7 angulo semirecto adscendentibus fere rectis, toto margine fere ad basin crenato; flores ut videtur monoeci, spicis femineis tantum visis terminalibus solitariis vel aggregatis breviter pedunculatis pedunculo incluso usque 9 cm. longis densifloris, rhachi dense puberula atque hispidula, bracteis bene evolutis non visis; styli graciles breves 4–6-lacinulati purpurei. —Mexico: El Limón, Río Mayo, Chihuahua, canyon stream, alt. 900 meters, July 25, 1935, *Howard Scott Gentry* 1540 (type in Herb. Field Mus.).

The available material, unfortunately, is in very young flowering state, so that it is impossible to describe the important details of the pistillate bracts.

Croton Cardenasii Standl., sp. nov.—Frutex 80 cm. altus, ramis novellis crassiusculis densissime pilis adpressis stellatis sessilibus albidis obtectis, internodiis elongatis interdum foliis longioribus; stipulae minutae vel obsoletae; folia inter minora longipetiolata herbacea, petiolo crassiusculo 1.5–3 cm. longo dense adpresso-stellato-piloso apice glandulis 2 magnis depressis onusto; lamina oblongo-ovata vel lanceolato-oblonga 7–9 cm. longa 3–4.5 cm. lata acuta vel acuminata, basi rotundata, integra, supra viridis glaberrima, subtus pallida ochracea densissime pilis brevibus mollibus stellatis tomentoso-pilosa, costa crassiuscula elevata, nervis lateralibus utroque latere ca. 10–12 angulo semirecto adscendentibus; flores monoeci, racemis terminalibus 4.5–9 cm. longis remote multifloris, sessilibus vel subsessilibus, rhachi dense stellato-tomentosa, pedicellis vix ultra 1 mm. longis; flores feminei pauci vel numerosi prope basin racemi interdum cum masculis inserti, sepalis 5 elliptico-ovatis vix 2 mm. longis extus dense stellato-tomentosis subobtusis ut videtur vix accrescentibus, stylis semel dichotomis; flores masculi in alabastro globosi ca. 1.5 mm. diam. extus dense stellato-tomentosi; stamina ca. 10; capsula immatura parva densissime stellato-tomentosa.—Bolivia: Roboré, alt. 416 meters, in open pampa, October, 1934, *M. Cárdenas* 3018 (type in Herb. Field Mus.).

Croton charaguensis Standl., sp. nov.—Frutex 2-metralis, ramis vetustioribus ferrugineis, novellis densissime pilis stellatis patentibus mollibus pilosis, sat dense foliatis; stipulae lineari-attenuatae 6–8 mm. longae glanduloso-serrulatae persistentes; folia inter minora longipetiolata herbacea, petiolo crassiusculo 2–3 cm. longo densissime molliter stellato-piloso; lamina ovato-oblonga vel lanceolato-oblonga 6–8 cm. longa 2–3.5 cm. lata, anguste attenuato-acuminata, basi anguste rotundata, interdum brevissime cordata, arcte minute serrato-dentata, dentibus salientibus, utrinque dense (subtus densius) pilis mollibus inaequiradiatis patentibus stellato-pilosa, e basi 5-nervia, nervo medio utroque latere supra basin nervos ca. 5 emittente; flores monoeci, racemis terminalibus sessilibus sat dense multifloris 5–8 cm. longis ca. 1.5 cm. latis, pedicellis gracilibus 3–5 mm. longis; flores feminei pauci in quoque racemo 1–2, sepalis 5 elliptico-ovalibus 4–5 mm. longis obtusis extus dense stellato-tomentosis; styli bis dichotomi sparse pilosi; flores masculi numerosissimi in alabastro globosi fere 4 mm. diam. densissime stellato-pilosi, sepalis 5 late ovatis obtusis, staminibus numerosissimis, 45 et ultra, antheris glabris, filamentis inferne longipilosis; capsula immatura 1 cm. diam., densissime pilis laxis mollibus longissimis ochraceis pilosa.—Bolivia: Rocky slopes, Quebrada de Charagua, region of the Oriente, alt. 850 meters, August, 1934, *M. Cárdenas* 2779 (type in Herb. Field Mus.).

Noteworthy for the short, dense racemes of exceptionally large flowers, and for the very long and soft hairs that cover densely the young capsules.

Croton Ortegae Standl., sp. nov.—Frutex, ramis vetustioribus fusco-ferrugineis gracilibus, novellis dense pilis minutis adpressis stellato-pilosulis; stipulae filiformes 2–3 mm. longae integrae deciduae; folia parva breviter petiolata membranacea, petiolo gracili 5–8 mm. longo minute dense adpresse stellato-pilosulo, apice glandulis 2 stipitatis parvis flavidis patentibus onusto; lamina oblongo-lanceolata 4–6 cm. longa 0.8–1.5 cm. lata apicem acutum vel subobtusum versus paullo angustata, basi obtusa vel acutiuscula, integra, utrinque minute sparse stellato-puberula, supra viridis, subtus paullo pallidior, penninervia; flores dioeci(?), femineis solitariis vel in racemos breves paucifloros capituliformes aggregatis, pedicellis usque 3 mm. longis, sepalis 5 valde inaequalibus foliaceis viridibus rotundato-ovatis subacutis ca. 6 mm. longis extus sat dense minute stellato-pilosulis, stylis semel dichotomis; capsula 4–5 mm. longa dense minute stellato-pilosula.—Mexico: Sinaloa, without definite locality, in 1933, *Jesús G. Ortega* 7019 (type in Herb. Field Mus.).

The form of the leaves suggests those of *Sida rhombifolia.* The species is a well marked one because of the small, narrow leaves with curious slender-stipitate glands at the apex of the petiole. On the type material no staminate flowers are present, and it is to be assumed that the plant is dioecious.

Croton roborensis Standl., sp. nov.—Frutex 80 cm. altus, ramis vetustioribus fusco-ferrugineis teretibus, novellis sat dense foliatis ubique densissime stellato-pilosis et velutinis, radiis basalibus pilorum brevibus, terminalibus longis mollibus; stipulae virides lineari-lanceolatae 5–6 mm. longae subobtusae caducae; folia inter minora petiolata herbacea, petiolo 8–15 mm. longo dense ut ramis stellato-piloso; lamina oblongo-ovata 5–8 cm. longa 2–3.5 cm. lata apicem obtusum versus angustata, basi anguste rotundata atque breviter cordata, in toto margine grosse crenato-serrata, supra viridis subdense pilis parvis subaequiradiatis conspersa, subtus paullo pallidior dense molliter stellato-pilosa, e basi 5-nervia, nervo medio utroque latere supra basin nervos 3–4 emittente; flores monoeci, racemis terminalibus dense multifloris 3–5 cm. longis, pedicellis usque 2.5 mm. longis; flores feminei 3–8, sepalis 5 viridibus elliptico-ovatis ca. 4 mm. longis subacutis dense breviter stellato-velutinis, petalis obsoletis, stylis semel bipartitis sparse pilosis; flores masculi densissime aggregati numerosissimi in alabastro globosi ca. 1.6 mm. diam. extus dense stellato-pilosuli, sepalis 5 tenuibus pallidis; stamina ca. 8 longiexsertae glabrae; capsula in statu juvenili densissime pilis albidis pilosa.—Bolivia: "Roboré of Chiquitos (Santa Cruz)," alt. 416 meters, in dry soil, October, 1934, *M. Cárdenas* 2952 (type in Herb. Field Mus.).

A low shrub with small, green, narrowly ovate, coarsely crenate-serrate leaves having abundant, soft pubescence, and with short and very dense racemes.

Jatropha fremontioides Standl., sp. nov.—Frutex metralis, ramis crassis flexuosis nodosisque subteretibus rubro-ferrugineis dense cinereo-puberulis, internodiis brevibus; folia parva breviter petiolata crasse membranacea, petiolo 2–5 mm. longo dense breviter pilosulo; lamina ambitu late ovata usque subreniformis 1.5–3 cm. longa atque fere aequilata undulata vel saepius breviter triloba, lobis obtusissimis vel subrotundatis, rare acutiusculis, interdum breviter trilobis, supra viridis molliter puberula vel glabrata, subtus paullo pallidior subsparse molliter pilosula, basi cordata, sinu aperto vel fere clauso, trinervia vel subquinquenervia; cymae reductae et capituliformes pauci- vel multiflorae breviter pedunculatae, bracteis numerosis imbricatis ovatis sparse pilosulis, floribus sessilibus vel subsessilibus; sepala 3 mm. longa elliptico-oblonga obtusa fere glabra ciliolata; petala in alabastro 4 mm. longa apice rotundata extus glabra ciliata breviter coalita; capsula juvenilis ca. 8 mm. longa ellipsoidea breviter rostrata acute trigona.—Mexico: Ixtepec, Oaxaca, alt. 90 meters, August 19, 1935, *George L. Fisher* 35498 (type in Herb. Field Mus.).

Not closely related to any other species known to the writer, noteworthy for the small, densely pubescent, short-petiolate leaves, whose form suggests those of the genus *Fremontia.*

Jatropha Ortegae Standl., sp. nov.—Rami crassiusculi nodosi subochracei vel subgrisei, novellis minutissime puberulis; folia ad nodos plus minusve aggregata longipetiolata membranacea vel crasse membranacea, petiolo gracillimo 1–4.5 cm. longo sparse minute puberulo vel fere glabro; lamina oblongo-ovata usque elliptica 4–9 cm. longa 2–5 cm. lata obtusa usque acuminata, basi truncata usque obtusa, integra, margine prope basin glandulis paucis stipitatis onusto, supra viridis glabra, subtus pallida vel glaucescens microscopice puberula vel fere omnino glabra, costa gracili prominente, penninervia, nervis lateralibus utroque latere ca. 4; cymae laxae pauciflorae vel interdum tantum 1-florae petiolo aequilongae vel paullo longiores graciliter pedunculatae, ramis brevibus gracilibus minute puberulis, pedicellis interdum filiformibus usque 5 mm. longis, bracteis parvis inconspicuis lanceolatis; sepala 2–6 mm. longa lanceolata vel ovata obtusa usque attenuata extus puberula, floris feminei in statu fructifero paullo accrescentia atque basin versus glandulis paucis stipitatis ciliata; corolla urceolata 6–7 mm. longa ca. 4 mm. lata, tubo sub limbo subcontracto, extus minute puberula vel glabrata, lobis erectis obtusissimis rotundato-ovatis vix 2 mm. longis; capsula immatura profunde triloba 13 mm. lata 8 mm. alta.—Mexico: Sinaloa, without definite locality, in 1934, *Jesús G. Ortega* 7283 (type in Herb. Field Mus.), 7413.

Marked by the long-petiolate, chiefly oblong-ovate to elliptic leaves in which the blade bears few or numerous rather large glands for some distance above the insertion of the petiole.

Jatropha platanifolia Standl., sp. nov.—Frutex, ramis crassis subteretibus nodosis, cortice brunnescente, novellis dense velutino-pilosis; folia (in statu juvenili tantum visa) longipetiolata, petiolo dense breviter velutino-piloso; lamina basi truncata vel breviter cordata fere ad medium triloba, interdum subquinqueloba, lobis ovatis longiacuminatis integris vel undulatis, utrinque dense velutino-pilosa, basi 5-nervia; flores cymosi, cymis reductis paucifloris breviter pedunculatis, pedunculo ramisque brevibus dense pilosis, bracteis parvis triangulari-lanceolatis, pedicellis brevibus crassis pilosulis; sepala 3 mm. longa in sicco subfusca oblonga vel oblanceolato-oblonga obtusa extus sparse hirtella; corolla 5–6 mm. longa extus glabra intus pilosa, petalis oblongis apice rotundatis prope basin breviter connatis.—Mexico: San Bernardo, Río Mayo, Sonora, in forest, June 26, 1935, *Howard Scott Gentry* 1449 (type in Herb. Field Mus.).

In the available material the leaves are in a very early stage of development, the blades being only 1.5–2.5 cm. long. From other related species of northwestern Mexico *J. platanifolia* is well differentiated by its deeply lobate, densely pubescent leaves.

Phyllanthus Austinii Standl., sp. nov.—Frutex gracilis 1–1.5 m. altus, interdum longior atque subscandens, ubique glaber, ramis gracillimis teretibus viridescentibus vel ochraceis, internodiis plerumque elongatis; stipulae viridescentes erectae lineari-subulatae 2.5–3 mm. longae; folia mediocria petiolata membranacea tenuia, petiolo filiformi 5–17 mm. longo; lamina ovata vel interdum lanceolato-ovata 6–10.5 cm. longa 2–5.5 cm. lata longe angusteque acuminata, basi rotundata vel late obtusa, supra intense olivacea, costa nervisque manifestis prominulis, subtus glaucescens, costa tenerrima elevata, nervis lateralibus utroque latere 5–6 obliquis angulo latiusculo adscendentibus tenerrimis arcuatis prope marginem arcuato-conjunctis, venulis subprominulis arctissime reticulatis; flores dioeci

axillares solitarii vel pauci atque fasciculati; pedicelli florum masculorum filiformes vix ultra 4 mm. longi, floribus parvis ca. 3 mm. latis; pedicelli florum femineorum capillares 2–4 cm. longi flexuosi, disco disciformi 1.5–2 mm. lato; styli 3 brevissimi recurvi; capsula obovoideo-globosa 8 mm. alta et ultra tricarinata; semina 3 pallide brunnescentia ca. 4 mm. longa ubique dense irregulariter suberoso-verrucosa.—Guatemala: Wet forest, Escoba, across the bay (west) from Puerto Barrios, Dept. Izabal, near sea level, May 3, 1939, *Paul C. Standley* 72868 (type in Herb. Field Mus.), 73012, 72968, 72951, 72981.

The species is dedicated to Mr. George B. Austin of the United Fruit Company, Puerto Barrios, to whom the writer is indebted for many courtesies and much practical assistance.

From *Phyllanthus Bartlettii* Standl., of British Honduras and Honduras, the present plant differs conspicuously in its round-based leaves. More closely related is *P. capillipes* Blake, of the same general region of Guatemala, but in that the capsules are only 3 mm. long, and the leaves are conspicuously narrower.

ICACINACEAE

Calatola venezuelana Pittier, Bol. Soc. Venez. Cienc. Nat. 4: 360. 1938.—The genus *Calatola* was proposed by the writer in 1923 (Contr. U. S. Nat. Herb. 23: 688. 1923), as consisting of two species of trees native of southern Mexico. Another species, *C. costaricensis*, was described in 1926 (Journ. Wash. Acad. Sci. 16: 416). The group was proposed with considerable mental reservation, there being some doubt as to whether it had been referred to the proper family, but at present this doubt has disappeared. Study of the wood, particularly, indicates that *Calatola* is definitely referable to the Icacinaceae, where flower structure had seemed to necessitate its reference.

What the writer has expected, however, is that some earlier name would be found for the group, especially since the known area of distribution has been so greatly extended in recent years. Since the specimens are most likely to be collected in fruiting state, when their reference to a family would be exceedingly difficult, it is probable that specimens obtained by early explorers would not be placed or described, but would be relegated to the undetermined material of a herbarium. No flowers have been seen by the writer from South America. The fruit of *Calatola* is so distinctive that once seen, it is not likely to be forgotten.

The four species of *Calatola* known at present are not too well differentiated, although it seems certain that there are at least three species in the genus. The quantity of herbarium material must be greatly increased before it is possible to decide satisfactorily the specific limits of the several forms.

Calatola mollis Standl. is known only from Mexico. *C. laevigata* Standl., described originally from Mexico, is now known also from British Honduras and Guatemala, and old fruits found by the writer on the Atlantic coast of Honduras probably are referable to the species. Of course, it is not known that they were from trees growing in Honduras, but the tree is to be expected there.

Calatola costaricensis Standl. is known from both Costa Rica and Panama. A collection of the genus from Colombia (region of Cincinnati, at 1,300–1,500 meters, *Espina & Giacometto* A146) I have referred formerly to *C. costaricensis*, but it is perhaps referable rather to *C. venezuelana*. As a matter of fact, more material is needed before it can be determined whether there are any sure characters for separating *C. venezuelana* from *C. costaricensis*. The fruits of the Colombian tree are unusually small, but not smaller than might be expected in the normal course of variation upon a single tree.

The present remarks are occasioned by the recent receipt of a specimen of the genus that extends very greatly its known area of dispersal: Peru: Shapajilla, Dept. Huánuco, at 630 meters, May 27, 1939, *Felix Woytkowski* 19; a tree about 9 meters high, with trunk diameter of 23 cm., the bark brown, thin; wood hard, whitish brown. The fruits are unusually large, about 6 cm. long, but in general the specimens agree well with Venezuelan ones, and at least for the present the Peruvian tree may be referred to *C. venezuelana*. The genus now may confidently be expected to grow in Ecuador, and perhaps also in eastern Bolivia.

RHAMNACEAE

Rhamnus pinetorum Standl., sp. nov.—Frutex metralis, ut videtur dense ramosus, ramis subteretibus nigrescentibus vel fusco-ferrugineis, novellis dense pilis mollibus patentibus breviusculis pilosis, internodiis brevibus; stipulae subulatae 2–3 mm. longae pilosulae; folia modica breviter petiolata crasse membranacea, petiolo 3–5 mm. longo crassiusculo dense piloso; lamina anguste oblonga vel lanceolato-oblonga 3–5.5 cm. longa 1.2–2 cm. lata apicem obtusum versus paullo angustata, basi rotundata vel obtusa, margine interdum revoluto fere integro vel remote adpresso-

serrulato, supra viridis pilis patentibus molliter sparse vel dense pilosa, subtus paullo pallidior sat dense pilis patentibus molliter pilosa vel serius glabrata, costa gracili prominente, nervis lateralibus utroque latere ca. 7 angulo semirecto adscendentibus prominentibus; flores axillares fasciculati pauci, pedicellis gracilibus 4–7 mm. longis patule pilosis; sepala 2 mm. longa patule pilosula ovata vel oblongo-ovata obtusa; fructus tricoccus glaber subglobosus ca. 7 mm. longus et aequilatus apice subdepressus obscure trilobus.—Mexico: Sierra Canelo, Río Mayo, Chihuahua, in shaded pine-cypress canyon, August 31, 1936, *Howard Scott Gentry* 2540 (type in Herb. Field Mus.). Mojarachic, Chihuahua, August, 1938, *I. Knobloch* 5288. Above Basaseachic Falls, Chihuahua, July, 1936, *Harde LeSueur* 777.

Related to *R. Pringlei* Rose, of Oaxaca and Veracruz, which is conspicuously different in its small, short, relatively much broader leaves.

MALVACEAE

Bastardia violacea Standl., sp. nov.—Suffrutex ramosus, ramis gracilibus teretibus, novellis densissime minuteque stellato-tomentellis, internodiis brevibus vel paullo elongatis; stipulae caducae; folia parva petiolata membranacea, petiolo gracili 3–7 mm. longo stellato-tomentello; lamina ovata vel lanceolato-ovata 1.5–2.5 cm. longa 1–2 cm. lata longe attenuato-acuminata, basi breviter cordata, lobis basalibus late rotundatis, arcte adpresso-crenata, utrinque densissime minute molliter stellato-tomentosa, basi 7-nervia; flores plerumque singuli atque axillares, pedunculis plerumque 5–6 mm. longis gracilibus versus apicem articulatis stellato-tomentellis; calyx ca. 8 mm. longus dense stellato-tomentellus atque pilis longis mollibus albis patentibus pilosus, lobis oblongo-ovatis tubo bene longioribus subulato-acuminatis trinerviis erectis; petala late cuneato-obovata 1 cm. longa glabra violacea; carpella 4 mm. longa dense molliter stellato-pilosa apice rotundata.—Mexico: Chinobampo, Río Mayo, Sonora, among rocks in mesquite arroyo, January 10, 1937, *Howard Scott Gentry* 2982 (type in Herb. Field Mus.).

LOASACEAE

Eucnide hypomalaca Standl., sp. nov.—Herba vel suffrutex ramosus fragilis decumbens, ramis crassis pallide viridibus dense pilis longis mollibus viscido-pilosis dense foliatis; folia modica longipetiolata membranacea, petiolo 2–4 cm. longo dense pilis patulis viscido-piloso; lamina late ovata vel rotundato-ovata 3–7 cm. longa 2.5–5 cm. lata obtusa, basi truncata vel breviter cordata, sinuato-lobata, lobis obtusissimis grosse sinuato-dentatis, supra tactu aspera sat dense glanduloso-pilosa vel serius glabrata, subtus ubique dense pilis eglandulosis mollibus velutino-pilosa; pedunculi axillares breves pilis longis patulis viscido-pilosi; sepala lineari-lanceolata pallide viridia 2 cm. longa basin versus 4 mm. lata longe sensim attenuata, pilis longis viscidis patentibus pilosa; petala alba ca. 4 cm. longa; stamina petalis bene longiora.— Mexico: Arroyo Mescales, Río Mayo, Sonora, on shaded sides of rock cliffs, February 18, 1935, *Howard Scott Gentry* 1315 (type in Herb. Field Mus.).

"Perennial, spreading and short-branched. A green alleviation on the bare rock walls. Sometimes three feet in diameter. Observed also at Caramechi." From other species of the genus the present plant differs substantially in the pubescence of the lower leaf surface. In *E. hypomalaca* the pubescence is soft and velvety to the touch; in other species rough and adhering to the fingers when touched.

LYTHRACEAE

Cuphea indocta Standl., sp. nov.—Herba annua(?) erecta 35 cm. alta et ultra sparse ut videtur ramosa, caule crassiusculo pallide viridi dense pilis patulis viscidis villoso, internodiis plerumque elongatis; folia modica petiolata membranacea, petiolo gracili 1–2 cm. longo viscido-villoso; lamina lanceolata usque ovato-lanceolata 4.5–7 cm. longa 1–2.5 cm. lata acuta vel attenuato-acuminata, apice ipso obtuso, basi acuta, supra in sicco cinereo-viridis hispidula atque hinc inde pilis paucis longioribus conspersa, subtus fere concolor ubique sat dense scaberula, ad costam pilis paucis longioribus hirtella; flores ex axillis superioribus nascentes solitarii vel geminati, pedicellis ad 3.5 mm. longis viscido-villosis, bracteolis 2 foliaceis viridibus lineari-lanceolatis usque 8 mm. longis; calyx 8–9 mm. longus tubulosus basi uno latere breviter rotundato-calcaratus atque 2 mm. crassus, pallide viridis, dense pilis patulis hispidulus, ore valde obliquo, dentibus brevissimis, intus glaber; stamina 11 inclusa glabra; petala ut videtur purpurea, majore longe unguiculato ca. 6 mm. longo; stylus glaber 4 mm. longus; ovula 3.—Mexico: Guasaremos, Río Mayo, Chihuahua, growing in margins of fields, under *Guazuma ulmifolia,* August 3, 1936, *Howard Scott Gentry* 2354 (type in Herb. Field Mus.).

UMBELLIFERAE

Eryngium calaster Standl., sp. nov.—Herba erecta perennis(?) 25 cm. alta et ultra, tantum ad nodos minute puberula, aliter glabra, caulibus gracillimis striatis simplicibus vel superne pauciramosis, internodiis elongatis, caule infra inflorescentiam vulgo bifoliato; folia basalia non visa, caulina sessilia vel breviter petiolata anguste oblanceolata 4–6 cm. longa 1–1.5 cm. lata obtusa, basin versus longe sensim attenuata, in toto margine arcte spinoso-serrata, dentibus acuminatis patentibus, 1-nervia, venis utrinque prominulis tenerrimis laxe reticulatis; capitula 1–4 atque 2.5–4 cm. longe pedunculata ovoideo-globosa ca. 6 mm. longa atque aequilata densissime multiflora; bracteae ca. 10 lineari-lanceolatae 1.5 cm. longae et 5 mm. latae apice tridentatae grosse spinuloso-serratae, extus in sicco caeruleo-virides, intus fere albae, bracteolis linearibus rigidis floribus multo longioribus.—Mexico: Memelichi, Río Mayo, Chihuahua, in meadow among pines, alt. 2,250 meters, September 16, 1936, *Howard Scott Gentry* 2762 (type in Herb. Field Mus.).

"Common in the moist meadows. Heads blue."

APOCYNACEAE

Macrosiphonia Woodsoniana Standl., sp. nov.—Frutex sat dense ramosus, ramis gracilibus teretibus ferrugineis rimosis, internodiis plerumque foliis brevioribus, novellis dense pilis albidis subpatulis tomentosis; folia parva subsessilia crassiuscula, petiolo vix 1 mm. longo; lamina oblonga vel ovato-oblonga 1–1.5 cm. longa 4–8 mm. lata acuta vel obtusa, basi rotundata, supra cinereo-viridis dense molliter pilosula, subtus paullo pallidior dense pilis longiusculis patulis vix intertextis pilosa; flores singuli axillares, pedunculo nullo, pedicello 7–11 mm. longo superne paullo incrassato piloso et puberulo; sepala anguste triangulari-lanceolata 4–5 mm. longa e basi ad apicem sensim attenuata subpurpurea dense pilosula; corolla alba extus densiuscule pilis albis longiusculis pilosa, tubo gracili 3.5 cm. longo 2 mm. crasso, fauce 2 cm. longo superne 7 mm. lato, lobis rotundatis 2 cm. longis et aequilatis apice late rotundatis; folliculi graciles ca. 6.5 cm. longi, valvulis 7 mm. latis.—Mexico: Guasaremos, Río Mayo, Chihuahua, arid oak slopes, July 30, 1936, *Howard Scott Gentry* 2342 (type in Herb. Field Mus.).

Local name San Juanito. "A low, woody bush. Petals white with a pink margin below, wilting under the sun." Although most of the species of *Macrosiphonia* are none too sharply differentiated, the present plant appears to have characters sufficient for specific segregation. It is related to *M. macrosiphon* (Torr.) Heller, which also occurs in Chihuahua, but that has usually much larger, more conspicuously petiolate leaves, and calyx lobes 1–2 cm. long. *M.*

hesperia I. M. Johnston, of Lower California, resembles *M. Woodsoniana* in its definitely shrubby habit, but differs in its large, ovate-orbicular leaves, and somewhat larger calyx lobes.

The species is named for Dr. Robert E. Woodson, Jr., monographer of the North American Apocynaceae, to whom the writer is indebted for many favors.

Zschokkea Standleyi Woodson, sp. nov.—Arbor ca. 5–7 m. alta; ramulis graciliusculis glabris. Folia opposita breviter petiolata oblongo-elliptica apice acute acuminata basi late obtusa rotundatave 10–12 cm. longa 3–4 cm. lata subcoriacea glabra; petiolo 0.6–0.8 cm. longo glabro. Inflorescentia lateralis opposita 3–8-flora; pedunculo 1.0–1.3 cm. longo glabro. Flores gilvi pro genere magni; pedicello 0.3 cm. longo glabro; bracteis late ovatis ca. 0.1 cm. longis; calycis laciniis ovato-subreniformibus rotundatis 0.2–0.25 cm. longis subfoliaceis margine ciliolatis; corollae salverformis tubo ca. 2.5 cm. longo paululo arcuato basi ca. 0.2 cm. diam. medio angustato tertia parte superiore staminigero ibique aliquid inflato extus glabro intus minute pilosulo, lobis oblique ovato-lanceolatis acuminatis ca. 0.8 cm. longis patulis extus glabris intus basi papillatis; antheris anguste oblongis 0.6 cm. longis; ovario ovato-fusiformi cum stylo 0.6 cm. longo glabro vel minutissime papillato, stigmate 2-fido anguste oblongoideo ca. 0.15 cm. longo apice apiculato dense puberulo-papillato. Fructus ignotus.—Guatemala: Entre Ríos, Dept. Izabal, alt. ca. 18 meters, common in pasture, April 30, 1939, *P. C. Standley* 72587 (Herb. Missouri Bot. Garden, type; Herb. Field Mus., duplicate).

This plant is of considerable interest since it is the most northern known representative of the South American genus *Zschokkea*, most frequent in the upper Amazon Valley. Like *Z. panamensis* Woods., it differs from the South American congeners by its relatively long, spreading corolla lobes, but the corolla, and particularly the calyx, are so large that at first sight the genus was not recalled. In all other known species of the genus the calyx is very inconspicuous, seldom exceeding 0.1 cm. in length; and this character apparently is quite constant.

ASCLEPIADACEAE

Asclepias amsonioides Standl., sp. nov.—Herba perennis 25 cm. alta, caule inferne tantum ramoso sparse bifarie puberulo vel fere glabro bisulcato subtereti, internodiis infimis abbreviatis, superioribus elongatis et foliis fere aequilongis; folia opposita brevis-

sime petiolata crassa, petiolo incrassato vix ad 3 mm. longo, in foliis superioribus nullo; lamina linearis 3.5–6 cm. longa 2.5–4 mm. lata e basi ad apicem sensim angustata, basi acuta vel obtusa et interdum subdilatata, supra glabra vel sparse minute puberula, subtus fere glabra vel ad costam pallidam prominentem sparse pilosula, nervis obscuris vel obsoletis; umbellae axillares singulae paucae 3–6 cm. longe pedunculatae, 7–8-florae, bracteis inconspicuis subulatis 3–5 mm. longis, pedicellis 12–17 mm. longis filiformibus sparse minute puberulis; calyx ca. 3 mm. longus glaber vel glabratus, segmentis lanceolato-oblongis acutis erectis; corolla rotata plus minusve reflexa glabra, lobis ut videtur pallide viridibus ovatis vel oblongo-ovatis 5–6 mm. longis obtusis pallido-marginatis; gynostegium subsessile, coronae cucullis late oblongis 3 mm. longis apice tridentatis, dentibus triangularibus acutiusculis, corniculis subexsertis simplicibus attenuatis.—Mexico: La Cima, Chihuahua, June 29, 1936, *Harde LeSueur* 848 (type in Herb. Field Mus.).

Asclepias Gentryi Standl., sp. nov.—Herba gracilis perennis ut videtur simplex 13–26 cm. alta, caule viridi bifarie incurvo-pilosulo, internodiis plerumque foliis paullo brevioribus, interdum duplo brevioribus; folia numerosa opposita anguste linearia sessilia vel in petiolum brevem angustata 3.5–6 cm. longa vix ultra 1.5 mm. lata, apice acutiuscula, sparse puberula vel pilosiuscula, uninervia, marginibus vulgo revolutis; umbellae axillares 2–3 vulgo 6–10-florae, pedunculis 1.5–2.5 cm. longis, bracteis subulatis brevibus, pedicellis filiformibus 5–14 mm. longis dense puberulis; calycis segmenta valde inaequalia usque 2.5 mm. longa lanceolato-linearia viridia adpressa incurvo-puberula; corolla glabra reflexa ut videtur rubro-purpurea, lobis oblongis obtusis ca. 4.5 mm. longis; gynostegium 1.5 mm. longe stipitatum, coronae cucullis luteis latis margine inflexis obtusis, corniculis simplicibus valde curvis.—Mexico: Guasaremos, Río Mayo, Chihuahua, sunny oak slopes, July 24, 1936, *Howard Scott Gentry* 2330 (type in Herb. Field Mus.).

"Scattered infrequently with short grass on almost barren slopes." A low, slender plant, with long, linear leaves, and compact, small umbels of apparently purple-red and yellow or orange flowers.

Asclepias suffrutex Standl., sp. nov.—Perennis ramosa prope basin lignosa, caulibus ut videtur numerosis gracillimis teretibus glaucescentibus vix ultra 1 mm. crassis glabris, internodiis plerumque foliis multo longioribus; folia pauca remota opposita filiformia vel anguste linearia patula vel recurva 2.5–5 cm. longa minus quam

1 mm. lata glabra pallida; umbellae ca. 3 ad apicem rami aggregatae breviter pedunculatae pauciflorae, pedicellis gracillimis glabris 8–14 mm. longis; sepala ca. 2 mm. longa anguste triangulari-lanceolata erecta anguste attenuata glabra; corolla reflexa glabra ut videtur pallide viridis vel fere alba, lobis 3.5 mm. longis obtusis; gynostegium breviter stipitatum, coronae cucullis oblongis margine inflexis apice rotundatis integris, corniculis simplicibus valde recurvis subulatis; folliculi immaturi lineari-lanceolati 3.5 cm. longi 3.5 mm. lati glabri, apicem versus longe sensimque attenuati.—Mexico: Huisiego, Río Mayo, Chihuahua, growing out of crevices in a boulder on oak slope, August 15, 1936, *Howard Scott Gentry* 2388 (type in Herb. Field Mus.).

"Perennial from a woody base. Margin of flower white." An extremely slender and rather delicate plant, pale green, with almost filiform, elongate leaves.

CONVOLVULACEAE

Ipomoea Gentryi Standl., sp. nov.—Herba ut videtur procumbens, caulibus brevibus striato-angulatis glabris, internodiis plerumque brevibus; folia parva longipetiolata membranacea, petiolo gracillimo 1.5–2.5 cm. longo glabro; lamina ambitu rotundato-ovata 1.5–2.5 cm. longa et aequilata profunde saepe fere ad basin 5-lobata, lobis exterioribus interdum quoque lobatis, lobis anguste lanceolato-oblongis usque fere linearibus longiattenuatis integris vel undulatis, basi profunde cordata, sinu late rotundato, supra sparse subadpresse hirtella, subtus glabra; pedunculi axillares singuli 8–13 mm. longi sursum paullo incrassati glabri; sepala oblonga adpressa 1.5 cm. longa obtusa vel acutata atque 1 mm. longe mucronata glabra puncticulata coriaceo-membranacea; corolla 8.5 cm. longa ut videtur pallide purpurea, tubo inferne gracillimo et 2 mm. crasso, parte angusta ca. 3 cm. longa, fauce subabrupte dilatato, limbo ca. 6 cm. lato obscure repando-lobato, lobis apice truncatis mucronatis; stamina 5 cm. longa.—Mexico: Sierra Canelo, Río Mayo, Chihuahua, in open meadow, pine-oak country, August 30, 1936, *Howard Scott Gentry* 2497 (type in Herb. Field Mus.).

"A small ground vine. Corolla opal."

Ipomoea maltratana Standl., sp. nov.—Herba volubilis, caulibus gracilibus teretibus striatis sparse minuteque hispidulis vel fere glabris, internodiis brevibus foliis subaequalibus; folia parva petiolata membranacea, petiolo 6–20 mm. longo gracili sparse hirtello vel glabrato; lamina sagittata vel late sagittata 1.5–3 cm. longa basi 1–1.5 cm. lata, lobo terminali triangulari-oblongo acuto vel acuminato apiculato, integro vel undulato, lobis basalibus latis oblongis vel rotundatis grosse undulato-paucidentatis, concolor, utrinque sparse hispidula, basi profunde cordata, sinu lato vel latissimo; pedunculi axillares singuli 1-flori cum pedicello 1–2 cm. longi sparse hispiduli, pedicello glabro obscure verruculoso; sepala subcoriacea inaequalia, interiora ovato-oblonga 5–6 mm. longa obtusa brevissime mucronata glabra adpressa, exteriora fere duplo breviora atque paullo latiora verruculosa; corolla ut videtur purpurea ca. 4.5 cm. longa.—Mexico: Zacatal, Maltrata, Veracruz, May, 1937, *E. Matuda* S-106 (type in Herb. Field Mus.).

LABIATAE

Hedeoma floribunda Standl., sp. nov.—Herba perennis erecta 30 cm. alta e basi dense ramosa, caulibus gracilibus incurvo-puberulis, internodiis foliis subaequalibus; folia modica breviter petiolata firme membranacea, petiolo vix ultra 2 mm. longo, lamina anguste oblonga vel oblanceolato-oblonga 7–18 mm. longa 2–5 mm. lata obtusa, basi angustato-acuta, utrinque dense punctata et sparse minute puberula, margine integro vel sparse apicem folii versus serrulato-dentato; flores numerosissimi apice caulis fere spicatim aggregati, inflorescentia densa plus minusve foliata, floribus dense fasciculatis, pedicellis gracillimis vix ultra 2 mm. longis; calyx tubulosus 3 mm. longus incurvo-puberulus, dentibus brevibus subpatulis triangularibus acuminatis, fauce dense barbato; corolla 6–7 mm. longa ut videtur purpurascens extus minute pilosula, labiis valde inaequalibus.—Mexico: Cerro Quicorichi, Río Mayo, Sonora, in pine woods, October 6, 1935, *Howard Scott Gentry* 1938 (type in Herb. Field Mus.).

Vernacular name Orégano. The plant is employed locally for seasoning meat stews.

SOLANACEAE

Brunfelsia nyctaginoides Standl., sp. nov.—Frutex(?), ramulis gracilibus teretibus, vetustioribus ochraceis, novellis dense breviter villosulis, internodiis brevibus; folia inter minora petiolata membranacea, petiolo gracili 8–15 mm. longo sparse villosulo vel glabrato; lamina ovata vel ovato-elliptica 4–8 cm. longa 2–4 cm. lata acuta, basi acuta, subito contracta et longe angusteque decurrens, supra viridis, ad costam breviter villosula, aliter glabra, subtus fere concolor, ad costam nervosque sparsissime villosa, aliter glabra, costa gracili prominente, nervis lateralibus utroque latere 3–5 arcuatis angulo semirecto adscendentibus tenerrimis prominulis, venulis obscuris; inflorescentia terminalis cymoso-corymbosa pauciflora vix foliis longior e basi ramosa, pedicellis usque 13 mm. longis dense breviter villosulis; calyx campanulatus ca. 1 cm. longus viridis fere glaber ad medium vel profundius lobatus, lobis ovato-oblongis acutis vel acuminatis ciliolatis; corolla extus ad nervos sparse villosula vel fere glabra, tubo gracili 3.5 cm. longo medio 2 mm. lato, fauce 5 mm. lato, e basi ad faucem sensim dilatato, limbo breviter lobato, lobis late rotundatis villosulo-ciliatis. México: Mount Tacaná, Chiapas, alt. 1,000–2,000 meters, August, 1938, *E. Matuda* 2411 (type in Herb. Univ. Michigan).

The material is in flower and young fruit. I am not altogether certain as to its generic disposition, but it seems to belong in *Brunfelsia*, although in foliage it is not exactly like any other species that I have examined. The genus has not been recorded before for Mexico.

LENTIBULARIACEAE

Utricularia Gentryi Standl., sp. nov.—Herba pusilla, caule 2.5–6 cm. alto gracillimo glabro recto vel subflexuoso 1–3-floro vulgo bracteis 1–2 minutis vix 1 mm. longis lanceolatis acuminatis sessilibus onusto; folia omnia basalia atque subrosulata anguste cuneato-spathulata 5–10 mm. longa apice subtruncata vel late rotundata, basin versus longe sensimque attenuata, in sicco tenerrima et fere hyalina, nervosa; flores pallide caerulei, pedicellis vix ultra 1 mm. longis, bracteolis pedicello brevioribus lanceolatis suberectis acutis vel acuminatis; calycis segmenta 2.5–3 mm. longa paullo inaequalia ovato-rotundata apice rotundata vel obtusissima; corolla glabra ca. 1 cm. longa vel ultra, labio postico 5 mm. longo, antico latissimo apice rotundato undulato, calcare 5–6 mm. longo angusto incurvo. —Mexico: Sierra Chirivo, Río Mayo, Sonora, March 8, 1935, *Howard Scott Gentry* 1407 (type in Herb. Field Mus.).

"On flat rock in seeping water. The delicate basal leaves were imbedded in a fine moss, and it was necessary to use tweezers to get them. Corolla pale blue."

RUBIACEAE

Capirona erythroxylon Standl., sp. nov.—Ramuli crassi dense pilis brevibus ochraceis hirsuti, internodiis brevibus; stipulae non visae; folia magna breviter petiolata membranacea, petiolo crasso ad 2 cm. longo dense breviter hirsuto; lamina cuneato-obovata vel late elliptico-obovata 15–27 cm. longa 8–14 cm. lata apice subrotundata et abrupte brevissime apiculato-acutata, e tertio superiore sensim ad basin cuneato-attenuata vel interdum subabrupte contracta et attenuata, supra sparse breviter hirsutula vel fere glabra, venulis arctissime reticulatis prominulis, subtus ubique dense molliter breviter pilosa, costa gracili elevata, nervis lateralibus utroque latere circiter 16 prominentibus angulo lato fere recto divergentibus, venulis prominentibus arcte reticulatis; inflorescentia terminalis cymoso-paniculata sessilis circiter 9–11 cm. longa et aequilata vel major, e basi trichotoma, ramis oppositis vel verticillatis late adscendentibus sparse pilosis vel glabratis, bracteis late ovatis vel ovalibus ad 6 mm. longis membranaceis deciduis, cymis paucifloris, pedicellis crassiusculis vulgo 3–8 mm. longis; hypanthium turbinatum 3 mm. longum sparse vel dense hirsutum vel glabratum, calyce breviter lobato, lobis late ovatis vel ovalibus apice rotundatis ca. 3 mm. longis, lobo uno interdum in laminam foliaceam 4.5 cm. longe petiolatam late ovatam glabram apice obtusam vel rotundatam palmatinerviam 6.5 cm. longam producto; corolla 2 cm. longa extus glabra, tubo crasso intus ad insertionem staminum villoso, lobis 5 ovato-oblongis acutis intus glabris tubo duplo brevioribus; stamina paullo infra faucem inserta, filamentis complanatis, antheris lineari-oblongis 6 mm. longis.—Peru: Without locality, "año de 1800," *Ruiz & Pavón* (type in herb. Madrid).

The vernacular name is reported as Palo colorado. This may be the plant to which reference is made by Schumann (in Mart. Fl. Bras. 6, pt. 6: 196. 1888): "Spruce found near Yurimaguas, along the Río Huallaga, another species, which I have not seen, with subpilose leaves attenuate at base and apex, and with paler bark." However, the characterization of the leaves does not agree well with the species here described. The present species is altogether different from the other one known from Peru, *C. decorticans* Spruce, in its pubescence and leaf shape. It is possible then that when more satisfactory material has been obtained, it will be necessary to make some other generic disposition of *Capirona erythroxylon.*

Cephaelis phaneroneura Standl., sp. nov.—Frutex 1.5 m. altus ramosus, ramis gracilibus subteretibus ochraceis, novellis pilis sordidis patentibus vel subadpressis sat dense pilosis, internodiis elongatis; stipulae persistentes in vaginam brevem annuliformem connatae, vagina setis 2 erectis pallidis 4 mm. longis et ultra utroque latere aucta; folia inter minora breviter petiolata membranacea, petiolo crassiusculo 5–8 mm. longo adpresso-piloso; lamina lanceolato-elliptica vel anguste oblongo-elliptica 9–14 cm. longa 3.5–5.5

cm. lata breviter vel longe acuminata, basin versus attenuata vel acuminata, supra in sicco fusca vix lucida ad costam adpresso-pilosa, aliter glabra, costa prominente, nervis manifestis sed non elevatis, subtus fere concolor, ad costam nervosque adpresso-pilosa, aliter glabra vel glabriuscula, costa gracili valde elevata, nervis lateralibus utroque latere ca. 6 elevatis angulo semirecto vel angustiore adscendentibus valde obliquis arcuatis, venis prominentibus transversis atque subparallelis remotis; inflorescentia capituliformis terminalis arcte sessilis 2.5 cm. longa 3.5 cm. lata densissime multiflora, bracteis liberis oblongo-ovatis vel oblongo-lanceolatis 6–8 mm. latis acutis extus dense breviter pilosis, intimis multo brevioribus atque angustioribus; flores in alabastro tantum visi et non bene evoluti. Peru: On rising ground, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, January 25, 1935, *José M. Schunke* 116 (type in Herb. Field Mus.).

A well marked species, not easily associable with any other Peruvian one. Although the flower heads are fully expanded, so far as the bracts are concerned, the flowers still are so young that it has been impossible to establish their character with any certainty.

Eizia Standl., gen. nov.—Frutices fere glabri, ramulis subteretibus ad nodos paullo dilatatis; folia opposita petiolata membranacea; stipulae interpetiolares brevissimae fere ad lineam interpetiolarem reductae; inflorescentia terminalis cymosa laxe pauciflora pedunculata, floribus pedicellatis magnis, bracteis bracteolisque valde reductis fere nullis inconspicuis; hypanthium clavatum basin versus sensim attenuatum costato-angulatum; calyx profunde 4-lobus viridis, lobis latis ad apicem fructus persistentibus; corolla hypocrateriformis fulva, tubo gracili longissimo, versus apicem paullo sensim dilatato, intus glabro, lobis 4 leviter imbricatis (vel convolutis?) patentibus oblongis venosis intus glabris; stamina 4 ad apicem tubi inserta, filamentis brevissimis, antheris dorsifixis erectis subexsertis obtusis; ovarium 2-loculare; stylus inclusus longissimus gracillimus puberulus apice brevissime bifidus, ovulis numerosis; capsula obovoidea costata, apice alte supra calycem persistentem protrusa, subcoriacea, apice septicide bivalvata, valvis apice bipartitis; semina numerosa angulata tuberculato-rugosa.

Type species, *Eizia mexicana* Standl.

Eizia mexicana Standl., sp. nov.—"Frutex herbaceus," ramulis pallide brunnescentibus in sicco substriatis, internodiis elongatis; linea stipularis vix 0.5 mm. alta medio breviter apiculata; petiolus gracilis glaber 1–2.3 cm. longus; lamina ovata vel oblongo-ovata 7.5–10.5 cm. longa 2.5–5.5 cm. lata anguste longiacuminata, basi saepe obliqua obtusa vel acuta, supra in sicco subfusca glabra puncticulata, costa subimpressa, nervis manifestis sed non elevatis, subtus fere concolor in axillis nervorum barbata, aliter glabra, costa gracillima elevata, nervis lateralibus utroque latere ca. 6 arcuatis angulo latiusculo adscendentibus, venulis obscuris; inflorescentia usque 1.5 cm. longe pedunculata, interdum sessilis, pauciflora laxa usque 7 cm. longa atque aequilata, ramis pedicellisque glabris vel glabratis, pedicellis rigidis 1.5–2.5 cm. longis erectis; hypanthium glabrum 4–5 mm. longum, calyce 2 mm. longo viridi, lobis late triangularibus acutiusculis; corolla extus saltem in parte superiore puberula, tubo 5 cm. longo infra orem 4 mm. lato, lobis ca. 8 mm. longis; antherae ca. 6 mm. longae 1 mm. latae; capsula ca. 12 mm. longa atque 8 mm. lata basi obtusa vel subacuta ca. 3 mm. supra calycem protrusa; semina irregulariter angulata 0.6–0.8 mm. diam. fusco-brunnea.—Mexico: Mount Tacaná, Chiapas, alt. 1,000–2,000 meters, August, 1938, *E. Matuda* 2402 (type in Herb. Univ. Michigan; fragment and photo. in Herb. Field Mus.).

This plant is a somewhat puzzling one, as so often is the case with unusual Rubiaceae. In general appearance it does not suggest definitely any other group of North or South America. The capsules do bear some similarity to those of *Manettia*, but the large corolla, with long, slender tube and spreading limb recalls to one the flowers of such a remote genus as *Mirabilis*. The genus is to be placed, apparently, in the tribe Rondeletieae, but there no close association with other genera is apparent. Probably it is related to *Lindenia* and *Stylosiphonia*, and more closely to the former. *Lindenia* differs, however, in having 5-parted flowers, narrow, elongate calyx lobes, and smooth seeds, nor is it similar in vegetative characters.

The genus is dedicated to its discoverer, Mr. Eizi Matuda, whose extensive explorations in southern Mexico have added many species to the known flora of that region, especially in the little known mountains of the state of Chiapas.

Hillia Matudai Standl., sp. nov.—Arbor 10-metralis, trunco 15 cm. diam., omnino glabra, ramulis crassis plus minusve compressis fuscis, internodiis brevibus; folia majuscula petiolata in sicco subcoriacea, petiolo crasso 1.5–2.5 cm. longo; lamina late elliptica vel ovali-elliptica 6.5–10.5 cm. longa 4–8 cm. lata obtusa, basi breviter cuneato-angustata, supra in sicco fusca, costa subimpressa, nervis prominulis, subtus paullo pallidior, costa prominente, nervis lateralibus utroque latere ca. 8 tenerrimis vix prominulis angulo angusto adscendentibus fere rectis, venulis obsoletis; inflorescentia terminalis cymoso-corymbosa saepissime triflora sessilis vel breviter pedunculata, pedicellis brevibus crassis; hypanthium clavatum 7–8 mm. longum basin versus sensim angustatum; calyx usque 9 mm. longus, segmentis erectis rigidis lanceolatis subulato-acuminatis inaequalibus; corolla alba coriacea, tubo gracili ca. 9 cm. longo medio 4 mm. lato, apice ca. 6 mm. lato, lobis 5 patentibus oblongis apice obtusis vel rotundatis 3–3.5 cm. longis; antherae semiexsertae; stylus breviter exsertus.—Mexico: Mount Tacaná, Chiapas, alt. 2,000–4,040 meters, August, 1938, *E. Matuda* 2327 (type in Herb. Field Mus.; duplicate in Herb. Univ. Michigan).

Among all species of *Hillia* found in Mexico or northern Central America this is easy of recognition because of the unusually large flowers and the large, broad leaves.

Hoffmannia areolata Standl., sp. nov.—Frutex 0.6–1.8 m. altus simplex(?), caule subtereti vel obtuse tetragono villoso vel glabrato, internodiis elongatis; folia mediocria longipetiolata herbacea, petiolo 2.5–5 cm. longo superne marginato villoso vel glabrato; lamina oblongo-elliptica vel ovato-oblonga ca. 15 cm. longa atque 5.5 cm. lata longe anguste acuminata, basin versus longe sensim attenuata atque decurrens, supra in sicco viridis, ad costam villosa, intra areolas venarum pilis aggregatis paucis albidis brevibus crassis villosa, subtus pallidior, ad costam elevatam villosa, ad nervos venasque pilis brevibus pallidis villosula, nervis lateralibus utroque latere ca. 17 teneribus prominentibus arcuatis angulo ca. recto divergentibus, venulis elevatis laxe reticulatis; flores numerosi dense aggregato-cymosi, inflorescentiis multifloris sessilibus vel brevissime pedunculatis; fructus dense pilis plurilocularibus longis villosus.—Panama: In rain forest, Bajo Chorro, Boquete District, Provincia de Chiriquí, 1,800 meters, January, 1938, *Mrs. M. E. Davidson* 40 (type in Herb. Field Mus.).

The flowers are described as greenish, although none are present on the single specimen seen, and the fruits as scarlet. The available material, unfortunately, is not in good condition, as the result of too abundant moisture during drying, and it is impossible to determine satisfactorily the characters of the inflorescence. The curious pubescence of the leaves is unlike that of any other species, and this character alone is sufficient to establish the species as distinct. The pubescence of the upper leaf surface consists of a small, isolated group of short, stubby, pale hairs in each areole.

Hoffmannia cryptoneura Standl., sp. nov.—Frutex ramosus, ramis gracilibus glabris in sicco fuscis, internodiis elongatis; stipulae parvae caducae; folia inter minora breviter petiolata membranacea, petiolo 6–17 mm. longo glabro; lamina oblanceolata vel oblongo-oblanceolata 7–11.5 cm. longa 2–2.8 cm. lata anguste acuminata vel interdum apicem subobtusum versus angustata, basin versus longe sensim attenuata, glabra, supra in sicco fuscescens, nervis obsoletis, costa non elevata, subtus pallidior, brunnescens, costa crassiuscula perspicua sed vix elevata, nervis lateralibus utroque latere ca. 8 sed vix obviis, venis obsoletis; flores pauci vel numerosi in axillis dense cymoso-aggregati, inflorescentia sessili petiolum vix aequante, floribus sessilibus vel usque 5 mm. longe pedicellatis tetrameris; hypanthium turbinatum glabrum 1 mm. longum, calyce aequilongo, dentibus brevibus triangularibus acutis; corolla extus glabra, tubo gracili 5–6 mm. longo superne paullo dilatato, lobis aequilongis patentibus oblongo-linearibus obtusis; stamina lobis corollae fere aequilonga, filamentis exsertis, antheris erectis linearibus 3.5 mm. longis.—Mexico: Mt. Ovando, Chiapas, April, 1936, *E. Matuda* 944 (type in Herb. Field Mus.); also No. 955. Duplicates of both collections in Herb. Univ. Michigan.

The nearest relative is perhaps *H. psychotriaefolia* (Benth.) Griseb., of Central America. In that the leaves are conspicuously different because of their prominent lateral nerves. In *H. cryptoneura* the nerves are scarcely perceptible.

Hoffmannia Davidsoniae Standl., sp. nov.—Frutex 0.6–1.8 m. altus ut videtur simplex, caule crassiusculo tereti glabro, internodiis elongatis; folia majuscula longe petiolata herbacea, petiolo gracili 2–5 cm. longo glabro; lamina ovalis vel ovali-elliptica 12–17 cm. longa 6.5–9 cm. lata, apice rotundata vel obtusissima atque breviter abrupte apiculato-acuminata, acumine triangulari vel anguste triangulari vix 1 cm. longo, basi subito acuta et breviter decurrens, glabra, supra in sicco fusca, costa nervisque vix elevatis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere ca. 15 teneris valde curvis angulo recto divergentibus prope marginem arcuato-conjunctis, venulis inconspicuis sed arcte reticulatis; inflorescentia axillaris sed e nodo defoliato nascens laxe cymoso-corymbosa longipedunculata multiflora ca. 4 cm. longa atque 9 cm. lata, basi trichotoma, pedunculo 4–6.5 cm. longo recto glabro, floribus tetrameris in alabastris tantum visis glabris, pedicellis fructiferis plerumque 5–7 mm. longis; fructus oblongo-ovalis 4–5 mm. longus 2.5 mm. latus obscure costatus, sepalis persistentibus late triangularibus brevissimis.—Panama: In rain forest, Bajo Chorro, Boquete District, Provincia de Chiriquí, 1,800 meters, January, 1938, *Mrs. M. E. Davidson* 216 (type in Herb. Field Mus.).

"Flowers pale pink; fruit scarlet." The species is noteworthy for the broad inflorescence, larger than in most other species of *Hoffmannia*, and borne upon an unusually long and stiff peduncle.

Morinda asperula Standl., sp. nov.—Frutex 3-metralis, ramulis crassiusculis in sicco fere nigris obtusangulis dense minuteque scaberulis, internodiis elongatis; stipulae persistentes late ovali-ovatae 10–14 mm. longae apice late obtusae vel rotundatae minute scaberulae; folia majuscula breviter petiolata firme membranacea in sicco fusca, petiolo crassiusculo 5–10 mm. longo scaberulo; lamina oblongo-elliptica vel subelliptica 11–18 cm. longa 4–7.5 cm. lata acuminata vel longiacuminata, basi acuta, supra glabra vel in statu juvenili sparse minute scaberula, cito glabrata, subtus ubique minute denseque scaberula, tactu asperula, in axillis nervorum dense barbata, costa prominente gracili, nervis lateralibus utroque latere ca. 7 angulo semirecto vel paullo latiore adscendentibus obliquis prominentibus subarcuatis; capitula axillaria solitaria 1.5 cm. longe pedunculata, pedunculo dense minute puberulo, capitulis dense plurifloris corollis exclusis 8 mm. diam.; calyx brevis truncatus minute puberulus; corolla alba 1 cm. longa dense puberula.—Guatemala: Hilly pine forest, near Quiriguá, Dept. Izabal, alt. 150 meters, April 26, 1939, *Paul C. Standley* 72368 (type in Herb. Field Mus.).

This plant is described with some hesitation, but it is difficult to place it with any of the three other species known from the Central American region. The size of the leaves indicates its relationship with *M. panamensis* Seem., but in that the leaves are glabrous, and average distinctly broader than in *M. asperula*. *M. yucatanensis* Greenm., of the Yucatan region, has pubescent leaves, but they are much smaller and narrower, and the pubescence much more ample and of different quality.

Rondeletia chiapasensis Standl., sp. nov.—Frutex, ramulis crassiusculis subteretibus rubescentibus densissime pilis longiusculis patentibus vel adscendentibus mollibus villoso-pilosis, internodiis brevibus; stipulae e basi triangulari longe anguste subulato-attenuatae 6–7 mm. longae dense pilosulae; folia modica breviter petiolata membranacea, petiolo crasso 5–10 mm. longo dense breviter piloso; lamina anguste oblongo-lanceolata 10.5–14 cm. longa 3–4 cm. lata longe anguste attenuato-acuminata, basi acuta, supra in sicco viridis dense pilis albidis longis vel brevibus patentibus vel subadpressis gracilibus sat dense pilosa, subtus pallidior densissime pilis longis laxis pallidis lucidis piloso-tomentosa, costa gracili prominente, nervis lateralibus utroque latere ca. 10 prominulis gracillimis angulo semirecto vel angustiore adscendentibus; inflorescentia spiciformis 7.5 cm. longa 2 cm. lata 4.5 cm. longe pedunculata erecta, rhachi crassa rubescente dense breviter pilosa, floribus in cymulas parvas densas sessiles dispositis, bracteis paucis filiformibus usque 4 mm. longis; hypanthium sicut calyx dense pilis adscendentibus hirtellum 1 mm. longum hemisphaericum, sepalis lanceolato-oblongis aequilongis vel paullo longioribus erectis acutis; corolla extus dense strigosa, tubo ca. 10 mm. longo crassiusculo fauce dense villoso-barbato et fere 2 mm. lato, lobis 4 rotundatis 3 mm. longis.—Mexico: Cascarada, Chiapas, December 31, 1936, *E. Matuda* 1064 (type in Herb. Univ. Michigan).

In general appearance as well as in details the plant is similar to *R. rufescens* Robinson of Guatemala. In that the corolla is glabrous in the throat and has a much more slender tube.

Rondeletia Mexiae Standl., sp. nov.—Frutex 2-metralis, ramis gracilibus teretibus ferrugineis, novellis dense pilis adscendentibus vel subpatentibus brevibus fulvidis pilosis, internodiis plerumque elongatis; stipulae subpersistentes ovato-triangulares ca. 4 mm. longae acutae sparse strigosae erectae; folia mediocria breviter petiolata membranacea, petiolo gracili 6–11 mm. longo dense breviter piloso; lamina ovata usque elliptica 7–10.5 cm. longa 3.5–5.5 cm. lata subabrupte longe angusteque attenuato-acuminata, basi rotundata vel obtusa, supra in sicco viridis sparse breviter patenti-pilosa, subtus paullo pallidior, ad nervos venasque sparse breviter albido-pilosa, costa gracili elevata, nervis lateralibus utroque latere ca. 6 gracillimis prominentibus valde arcuatis angulo semirecto vel paullo latiore oblique adscendentibus; inflorescentia terminalis cymoso-paniculata sessilis e basi trichotoma usque 5.5 cm. longa, floribus paucis vel numerosis ad apices ramorum dense aggregatis sessilibus vel brevissime pedicellatis, ramis dense patenti-hirsutulis, bracteis deciduis elongatis filiformibus vel linearibus hirsutulis; hypanthium obconicum 3–4 mm. longum densissime hirsutum; sepala 4 foliacea viridia paullo inaequalia 7–10 mm. longa lanceolata attenuata utrinque dense subadpresse pilosa; corolla ut dicitur alba (aperta non visa) extus densissime pilis longis albidis subadpressis hirsuta in alabastro 1.5 cm. longa, lobis ut videtur tubo plus quam duplo brevioribus.—Mexico: State of Oaxaca, Distrito Choapam, Montaña Santa María, in undergrowth in partial shade of forest, alt. 1,500 meters, April 1, 1938, *Ynes Mexia* 9261 (type in Herb. Field Mus.).

An unusually well marked species, clearly to be associated with *Rondeletia hondurensis* Donn. Smith, which differs in having the leaves arachnoid-tomentose beneath, and in many other details.

Rudgea magna Standl., sp. nov.—Frutex(?) glaber, ramulis crassiusculis, internodiis brevibus; stipulae deciduae, non visae, intus basi setulis numerosis incrassatis corneis pallidis persistentibus 1 mm. longis auctae; folia inter maxima breviter petiolata chartacea, petiolo crasso ca. 1.5 cm. longo; lamina oblongo-elliptica usque late elliptica 17–22 cm. longa 8–12.5 cm. lata, apice abrupte contracta atque breviter cuspidato-acuminata, basi acuta vel cuneato-contracta, supra viridis, costa nervisque manifestis, opaca, subtus fere concolor, sublucida, costa gracili elevata, nervis lateralibus utroque latere ca. 10 angulo fere recto divergentibus teneris arcuatis juxta marginem conjunctis, nervulis inconspicuis; inflorescentia parva terminalis ut videtur pauciflora 2.5 cm. longe pedunculata, floribus pedicellatis; fructus juvenilis subglobosus 13 mm. longus 10 mm. latus; calyx ad apicem fructus persistens fere 1 cm. longus atque 8 mm. latus subtruncatus; corolla extus glabra, tubo 1.5 cm. longo prope apicem 4 mm. crasso, lobis 5 lanceolato-oblongis recurvis tubo duplo brevioribus.—Panama: Hills of Sperdi, near Puerto Obaldía, San Blas Coast, alt. 20–200 meters, September, 1911, *H. Pittier* 4350 (type in Herb. Field Mus.).

The single specimen at hand bears only a partial inflorescence and a detached corolla, consequently it is impossible to state what the form of a complete and perfect inflorescence may be. The species differs from all others known from Central America in its very large leaves, and notably in the large flowers.

Sickingia(?) **ecuadorensis** Standl., sp. nov.—Frutex, ramulis crassis teretibus subdense patenti-pilosis ochraceis, internodiis superioribus brevibus; folia magna breviter petiolata crasse membranacea, petiolo crasso 12 mm. longo dense piloso; lamina late cuneato-obovata ca. 28 cm. longa atque 16 cm. lata, apice late obtusa et brevissime abrupte apiculato-acuminata, e medio basin versus sensim cuneato-angustata, basi ipsa anguste rotundata vel obtusa, supra in sicco fusco-viridis opaca sparse pilis rigidis patentibus brevibus hirsuta vel glabra, nervis manifestis sed non elevatis, subtus paullo pallidior ubique sparse breviter brunneo-hirsuta, costa crassa prominente, nervis lateralibus utroque latere circiter 25 angulo fere recto divergentibus prominentibus gracilibus fere rectis prope marginem arcuato-conjunctis venulis remotis transversis irregularibus connexis, venulis ultimis arcte reticulatis; inflorescentia (tantum in statu fructifero visa) ut videtur cymoso-paniculata; lobus 1 calycis in laminam magnam foliaceam 3–4.5 cm. longe petiolatam expansus, lamina late ovata vel rotundato-ovata ca. 8 cm. longa et 5–6 cm. lata obtusa, basi abrupte contracta et ca. 7-nervia, nervis fere ad apicem protractis, supra sparse hirtella, subtus praesertim ad venas pilosa, venis prominentibus laxe reticulatis; capsula subglobosa 4 cm. longa 5 cm. lata basi et apice late rotundata bilocularis; semina horizontalia numerosa valde compressa oblongo-semiorbicularia pallida et roseo tincta, ala inclusa 2.5 cm. longa 1 cm. lata, ala parte seminifera longiore.—Ecuador: In regione tropica sicca in sylvulis prope Guayaquil, January, 1936, *Luis Mille* 884 (type in Herb. Field Mus.).

The fruit is exactly that of the genus *Sickingia*, but I do not believe that the tree belongs to that genus. Flowers probably will show that it represents an undescribed generic group, for it can not well be associated with any of the known genera in which the calyx lobes are expanded into a large, foliaceous limb.

Sickingia hadrantha Standl., sp. nov.—Arbor 10-metralis, trunco 80 cm. diam., ramulis crassis teretibus sordido-ferrugineis lenticellatis, novellis breviter pilosulis; stipulae non visae; folia majuscula breviter petiolata subcoriacea, petiolo 1–1.5 cm. longo crassiusculo glabro; lamina oblongo-obovata vel elliptico-oblonga 15–18 cm. longa et ultra 6.5–10 cm. lata subabrupte acuminata, basi anguste rotundata usque subacuta, glabra, supra in sicco fuscescens lucida, costa nervisque prominentibus, subtus fere concolor brunnescens, costa elevata, nervis lateralibus utroque latere ca. 12 gracilibus prominentibus arcuatis angulo lato adscendentibus, venulis prominentibus vel prominulis laxe reticulatis; inflorescentia cymoso-paniculata corymbiformis sessilis ca. 10 cm. longa atque 10–12 cm. lata densissime multiflora basi trichotoma, ramis crassis adscendentibus vel suberectis repetite trichotomis dense breviter brunneo-pilosulis, bracteis interdum foliaceis, saepius linearibus et usque 8 mm. longis, floribus dense aggregatis sessilibus; hypanthium glabrum turbinatum 1.5–2 mm. longum; calyx 1.5 mm. longus profunde dentatus, dentibus triangularibus acutis vel acuminatis erectis glabris; corolla alba campanulata vel fere urceolata 4 mm. longa extus glabra, lobis brevissimis obtusis latioribus quam longis, fauce dense albo-barbata, pilis extrusis; antherae longiexsertae vix ultra 1 mm. longae; stylus breviter exsertus.—Peru: On river bank, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, March 5, 1935, *José M. Schunke* 347 (type in Herb. Field Mus.).

A related species is *Sickingia tinctoria* (HBK.) Schum., of the same region, which differs in its larger corolla and anthers.

Syringantha loranthoides Standl. Field Mus. Bot. 8: 153. 1930.—The genus *Syringantha*, a well marked one, related to *Exostema*, was based upon four collections in the Leningrad herbarium, all obtained in Mexico by Karwinsky. There has come to hand a recent collection, the only one, so far as known, made during the past century: Mexico: Tamazunchale, San Luis Potosí, September, 1938, *L. A. Kenoyer* A266. The specimens at first glance remind one somewhat of *Hamelia*, because of the form of the inflorescence and of the buds. In the recent collection the leaves are somewhat larger than originally described, being as much as 8 cm. long and 22 mm. wide.

Tobagoa maleolens Urban, Repert. Sp. Nov. 14: 343. 1916. —This monotypic genus was described from Tobago, and is known to occur in the region of Caracas, Venezuela, where it appears to be rather frequent. A single recent collection establishes the fact that its range extends to Central America: North rim of El Valle de Antón, Prov. Coclé, Panama, at 600–1,000 meters, February, 1939, *P. H. Allen* 1666; an herb 1 meter high, the flowers white.

VALERIANACEAE

Valeriana cucurbitifolia Standl., sp. nov.—Herba ut videtur alta atque erecta, caulibus crassissimis in sicco usque 12 mm. crassis fistulosis ad nodos pilosulis, aliter glabris vel glabratis, internodiis valde elongatis; folia membranacea simplicia, caulina atque basalia conformia, longipetiolata, petiolis infimis usque 15 cm. longis sparsissime pilosis vel fere omnino glabris, foliorum caulinorum brevioribus ca. 4 cm. longis; lamina vulgo reniformi-orbicularis interdum paullo angulata usque 18 cm. longa atque aequilata acuta, basi profunde cordata, sinu aperto, ima basi abrupte contracta et breviter cuneato-decurrens, in margine grosse undulato-dentata, dentibus brevibus late triangularibus obtusis, utroque latere tantum ad nervos venasque sparse breviter pilosa, interdum fere omnino glabra, subtus vix pallidior; inflorescentia magna longipedunculata ca. 16 cm. alta et aequilata laxe multiflora, repetite dichotoma cymiformis, bracteis linearibus, infimis 1.5 cm. longis, superioribus multo brevioribus, ultimis numerosissimis atque imbricatis viridibus attenuatis, floribus cymosis vel breviter spicatis sessilibus; fructus (juvenilis tantum visus) ca. 2.5 mm. longus in sectione lanceolatus basi rotundatus, sensim apicem versus attenuatus, nervoso-angulatus, pappi setis longis albidis plumosis.—Mexico: Tablas, Siltepec, Chiapas, August 8, 1937, *E. Matuda* 1709 (type in Herb. Field Mus.; duplicate in Herb. Univ. Michigan).

Well marked by the large leaves, which in general appearance are remarkably like those of some species of *Cucurbita.*

Valeriana LeSueurii Standl., sp. nov.—Herba perennis ca. 75 cm. alta, caulibus singulis infra inflorescentiam simplicibus crassiusculis teretibus ca. 3.5 mm. crassis, internodiis valde elongatis, infimis densissime pilis brevibus albidis patentibus pilosulis, superioribus fere glabris; folia basalia longipetiolata membranacea, petiolo crasso 1.5 cm. longo minute pilosulo, lamina oblongo-obovata ca. 3.5 cm. longa atque 1.5 cm. lata apice rotundata, basi cuneato-attenuata, integra, supra dense minutissime albido-pilosula, subtus aequaliter vel sparsius pilosula concolore; folia caulina sessilia opposita vel verticillata profunde pinnato-partita ca. 3 cm. longa, segmentis linearibus vel fere teretibus rigidiusculis; inflorescentia valde elongata laxissima anguste racemoso-paniculata, ramis vulgo quaternis brevibus flexuosis sursum incurvis gracillimis glabris vel puberulis, floribus sessilibus dense in cymulas paucifloras capituliformes aggregatis, bracteis viridibus lanceolatis vel ovatis, inferioribus 3.5 mm. tantum longis, supremis parvis acutis vel acuminatis; corolla alba extus glabra 1.5 mm. tantum longa, lobis latis brevissimis apice rotundatis, antheris breviter exsertis.—Mexico: Mesa Correo, Chihuahua, July 2, 1936, *Harde LeSueur* 1077 (type in Herb. Field Mus.).

Well marked among the species of northern Mexico by the short, entire basal leaves, rounded at the apex. Possibly conspecific is *Gentry* 2739 from Memelichi, Río Mayo, Chihuahua, at 2,250 meters. This collection is in mature fruit. Since it has no basal leaves and the form of the inflorescence is somewhat different from the LeSueur type, it may be that two distinct species are involved.

Valeriana Skutchii Standl., sp. nov.—Herba perennis erecta plus minusve caespitosa, caulibus inferne simplicibus crassiusculis 3–5 mm. crassis interdum fistulosis ubique sparse pilis longiusculis patentibus pilosis, internodiis valde elongatis; folia basalia longipetiolata subcarnosa, petiolo 4–6 cm. longo basi dilatato fere glabro; lamina lineari-oblanceolata 3–11 cm. longa usque 1 cm. lata obtusissima vel obtusa, basin versus longe sensim attenuata, integra vel obscure undulato-dentata glabra, tantum in incisuris marginis breviter albo-barbata; inflorescentia usque 17 cm. longa atque fere aequilata laxa multiflora trichotoma vel superne repetite dichotoma, bracteis linearibus ca. 1 cm. longis, superioribus viridibus similibus sed multo brevioribus, floribus parvis sessilibus in cymulas parvas paucifloras vulgo pedicellatas dispositis; corolla alba extus glabra, lobis oblongis obtusis patentibus ca. 2 mm. longis, tubo sursum dilatato aequilongo; filamenta longe exserta; fructus lanceolato-ovoideus ca. 2.5 mm. longus basi rotundatus dense breviter patenti-pilosus vel interdum glaber.—Guatemala: Open pine woods, Sierra de los Cuchumatanes, Dept. Huehuetenango, alt. 3,330 meters, September 15, 1934, *Alexander F. Skutch* 1240 (type in Herb. Field Mus.). Volcán de Santa María, in open, sunny stand of pine, Dept. Quezaltenango, alt. 3,550 meters, July, 1934, *Skutch* 853.—Mexico: Chiapas, *Ghiesbreght* 801.

Noteworthy for the numerous narrow, almost entire basal leaves. Both pilose and glabrous achenes exist on different inflorescences (detached) of the type sheet, and I judge that the variation in fruit pubescence must be an individual variation. The middle cauline leaves are lance-linear, dilated toward the base, and as much as 6.5 cm. long.

COMPOSITAE

Aster Gentryi Standl., sp. nov.—Subgenus *Machaeranthera.* Herba biennis(?) erecta 40 cm. alta vel ultra ut videtur inferne simplex, caule superne pauciramoso crassiusculo viridi striato ubique sat dense, superne densissime, glanduloso-villoso internodiis foliis brevioribus; folia caulina numerosa sessilia oblonga vel lanceolato-oblonga 2–4 cm. longa atque 8–10 mm. lata vel ultra, obtusa vel acuta, basi rotundata vel subcordata et plus minusve amplexicaulia integra vel subintegra, ubique breviter glanduloso-pilosula vel glanduloso-scabra, interdum plus minusve glabrata; folia inflorescentiae multo reducta et fere bracteiformia plerumque 8–12 mm. longa ovata amplexicaulia; capitula pauca ad apices ramorum singula vel aggregata breviter vel longe pedunculata, disco fere 1.5 cm. lato; phyllaria subaequalia viridia 5–6 mm. longa linearia subulato-attenuata dense glanduloso-pilosula; radii numerosissimi lineares atque paullo ultra 1 cm. longi; achaenia juvenilia hispidula, pappi setis albidis 4 mm. longis; corolla 4–5 mm. longa.—Mexico:

Memelichi, Río Mayo, Chihuahua, meadow margin, among pines, alt. 2,250 meters, September 15, 1936, *Howard Scott Gentry* 2728 (type in Herb. Field Mus.).

The rays are described as purple, the disk as yellow.

Brickellia Hinckleyi Standl., sp. nov.—Herbacea 60 cm. alta et ultra, caulibus erectis rigidis ut videtur inferne simplicibus, superne paullo ramosis teretibus viridibus sat dense pilis patentibus crassiusculis albidis glanduloso-villosis, internodiis brevibus; folia omnia nisi infima alterna parva rigido-herbacea sessilia vel brevissime petiolata, petiolo vix ultra 2 mm. longo; lamina lanceolata vel lanceolato-ovata 2.5–4 cm. longa 8–14 mm. lata, foliis supremis paullo reductis, longe angusteque attenuato-acuminata, basi late breviter cuneata, serrata vel subintegra, dentibus paucis, supra glanduloso-scabra, subtus densius glanduloso-hirtella, trinervia; capitula magna pauca ramos axillares paucifoliatos terminantes vel apice caulis pauca et corymbosa, campanulata pappo incluso 15 mm. longa atque ca. 1 cm. lata, pedunculis gracilibus erectis glanduloso-villosis; phyllaria laxe imbricata viridia multistriata, interiora lanceolato-linearia longe sensim attenuata, exteriora multo breviora oblongo-ovata caudato-cuspidata, omnia villoso-ciliata atque plus minusve glandulosa; flores ca. 24; achaenia 4.5 mm. longa dense sericea.—Texas: Madera Canyon, near Livermore, Davis Mountains, August 27, 1939, *L. C. Hinckley* 1225 (type in Herb. Field Mus.).

In a region in which so much collecting has been done as in the Davis Mountains, it is decidedly surprising to find a new plant so distinct as this one appears to be. It may well be that specimens of it are preserved in other herbaria, but none were available to Dr. Robinson when he published his monograph of the genus. *Brickellia Hinckleyi* is obviously related to *B. Wislizeni* Gray, of Chihuahua and Durango. In the Mexican plant, however, nearly all the leaves are opposite, rounded or cordate at the base, and varying from narrowly rounded to merely acute at the apex. The heads of the Texas plant, although similar in size to those of *B. Wislizeni*, have only half as many achenes.

Cacalia pratensis Standl., sp. nov.—Herba perennis erecta 60 cm. alta vel ultra rigida, caulibus singulis(?) crassiusculis striatis glabris vel in statu juvenili plus minusve adpresso-pilosis, internodiis bene elongatis; folia basalia longipetiolata crassiuscula et subrigida, petiolo 11–22 cm. longo prope basin paullo dilatato fere omnino glabro; lamina latissime ovato-cordata vel reniformi-cordata 5–11 cm. longa 5.5–9.5 cm. lata, apice obtusissima vel subrotundata, basi profunde (1.5–3.5 cm.) cordata, sinu aperto lato, lobis basalibus subrotundatis, toto margine undulato-dentato, dentibus brevibus latis obtusissimis, supra sparse villosa vel in statu juvenili forsan laxe tomentosa, subtus ad venas nervosque sparsissime breviter tomentulosa vel fere glabra penninervia; folia caulina multo minora ovata, petiolo latissime alato atque vaginante, foliis supremis ad vaginas reductis 2–2.5 cm. tantum longis; inflorescentia ad capitulum singulum multicapitatum 2.5–3 cm. diam. pedunculatum reducta, bracteis extimis linearibus foliaceis usque 1.5 cm. longis; involucrum 8 mm. altum, phyllariis ca. 8 glabris oblongo-ovatis acutiusculis prope apicem albo-ciliatis arcte imbricatis; corolla glabra 6–7 mm. longa; achaenia anguste columnaria nigrescentia 4 mm. longa, pappo albo fere aequilongo.—Mexico: Very wet meadow near San Juanito, Distrito de Bocoyna, Chihuahua, alt. 2,430 meters, July 26, 1937, *Forrest Shreve* 8031 (type in Herb. Field Mus.). Memlichi, Río Mayo, Chihuahua, in transition zone among pines, alt. 2,250 meters, September, 1936, *Howard Scott Gentry* 2785; aquatic, a small colony in meadow seep.

Verbesina Gentryi Standl., sp. nov.—Herba erecta inferne ut videtur simplex 50 cm. alta et ultra, caule crasso dense scabro vel hirtello fere ad capitula alato, alis viridibus integris usque 4 mm. latis; folia opposita majuscula sessilia et longe basi in alas decurrentia, ovata vel rhombico-ovata, caulina usque 14 cm. longa et 8 cm. lata acuta vel acuminata dentata vel grosse dentata, crassa, utrinque scaberrima; capitula numerosa corymbosa, inflorescentia usque 30 cm. longa, pedunculis ultimis graciusculis exalatis brevibus dense viscido-hirtellis et scabris, capitulis campanulatis radiatis 5–6 mm. altis 7–10 mm. latis luteis; phyllaria vix ad 3 mm. longa inaequalia oblonga acuta hispidula; radii pauci lineares 5–7 mm. longi lutei; paleae disci latae apice apiculato-rotundatae glabrae.—Mexico: Guasaremos, Río Mayo, Chihuahua, in valley margins, August 23, 1936, *Howard Scott Gentry* 2416 (type in Herb. Field Mus.).

The heads are in young flower, and it is impossible to determine the nature of the achenes. The collector describes the plant as a tall, slender herb with orange heads. Its relationship is with *Verbesina pterocaula* DC., of southern Mexico, which differs conspicuously in its larger heads as well as in several other respects.

STUDIES OF AMERICAN PLANTS—X

BY

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STUDIES OF AMERICAN PLANTS—X

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The following pages are devoted chiefly to descriptions of new plants, principally from extensive tropical American collections received for determination during the past few years. Series that have proved particularly rich in additions to the known floras of Mexico and Central America are those of Mr. E. Matuda in Chiapas, especially on the Volcano of Tacaná; those of Mrs. M. E. Davidson in the mountains of Chiriquí, Panama; and those from the high and isolated peak of Cerro Potosí, in the State of Nuevo León, Mexico, collected by Dr. C. H. Mueller and by Mr. Richard A. Schneider. It is perhaps worthy of note that the most recent collections obtained in Costa Rica by Mr. Austin Smith, particularly those of the San Carlos region, have continued to yield numerous additions to the published catalogue of the Costa Rican flora.

Among the rather numerous new Rubiaceae here published, probably most important are those gathered by Dr. A. Ducke during his latest exploration of the Amazon Valley. In this instance, as in case of the other series mentioned, further new species still await description and publication.

CYCLANTHACEAE

Carludovica Killipii Standl., sp. nov.—Epiphytica, caudice 3 cm. crasso dense foliato brevi, vaginis dense imbricatis, internodiis brevissimis; folia magna longipetiolata coriacea, petiolo crasso ca. 28 cm. longo, vaginis ca. 14 cm. longis basi fere 6 cm. latis; lamina profunde bifida ca. 38 cm. longa, segmentis linearibus 3.5 cm. latis longe attenuato-acuminatis trinerviis; pedunculus 10 cm. longus crassiusculus, nodis 2-3; spadix anguste oblongus 4.5 cm. longus 1.3 cm. latus apice rotundatus, densissime multiflorus.—Colombia: In mangrove swamp, Buenaventura Bay, Dept. El Valle, April 13, 1939, *E. P. Killip* 34975 (type in Herb. Field Mus.).

Two inflorescences are present, one much weathered, the other somewhat the worse for excessive moisture while the specimen was being dried, so that floral details can not be determined readily. A distinct species appears to be represented, and I have been unable to associate it with any described one. The collector states that the

leaves, which are conspicuously distichous and apparently numerous, form large, fan-like clusters. The habitat reported is unusual for plants of this genus.

ARACEAE

Anthurium Allenii Standl., sp. nov.—Epiphytica, caudiculo brevi crasso, internodiis brevissimis; petiolus subgracilis 20–26 cm. longus 10–14 mm. infra apicem geniculatus, nodo non incrassato; lamina oblongo-lanceolata prope basin paullo latior in sicco subcoriacea utrinque fusco-punctata, 30–40 cm. longa 6.5–10.5 cm. lata, acuminata et subito cuspidata, basi obtusa vel breviter cuneata, costa gracili utrinque prominente, nervis lateralibus primariis numerosis gracillimis prominulis secondariis vix crassioribus angulo semirecto adscendentibus ca. 7 mm. a margine in nervum distinctum gracillimum collectivum conjunctis; pedunculi graciles 18–35 cm. longi petiolis longiores vel breviores; spatha oblongo-lanceolata 5 cm. longa ca. 1 cm. lata apiculata; spadix breviter crasse stipitatus cylindricus vel fere caudiformis, ad anthesin sursum paullo attenuatus, 9 cm. longus 5 mm. crassus, in statu fructifero 14 cm. longus et fere 1 cm. crassus.—Panama: North rim of El Valle, Prov. Coclé, June, 1939, *P. H. Allen & A. H. G. Alston* 1854 (type in Herb. Mo. Bot. Gard.); May, 1939, *Allen* 1819.

This evidently is closely related to *A. chiriquense*, described here, but that has epunctate leaves which are about equally narrowed to each end, rather than punctate and broadest near the base, as in *A. Allenii*.

Anthurium Baileyi Standl., sp. nov.—Planta majuscula terrestris, caudice brevi vel fere nullo ca. 1.5 cm. crasso, internodiis brevissimis; cataphylla brevia persistentia subcoriacea; petiolus 50–60 cm. longus gracilis prope basin 7 mm. crassus teres in sicco brunnescens; lamina deltoideo-ovato-cordata in sicco tenuis atque fere membranacea ca. 44 cm. longa atque 32 cm. lata, subito breviterque acuminata, supra viridis et saepius dense nigro-punctata, subtus aliquanto pallidior, lobis posticis magnis rotundatis vel latere exteriore obtuso-angulatis, sinu lato aperto triangulari ca. 12 cm. longo, nervis primariis costalibus utroque latere ca. 7 nervum tenuem irregularem collectivum prope marginem formantibus, nervis basalibus 5; pedunculus ca. 45 cm. longus gracilis teres brunnescens; spatha ut videtur viridis 12.5 cm. longa basi 1.5 cm. lata lineari-lanceolata longissime attenuata spadice paullo brevior; spadix 1.5 cm. longe stipitatus 12 cm. longus basi 7–8 mm. crassus sursum paullo attenuatus obtusus.—Panama: Barro Colorado

Island, Canal Zone, June 15, 1931, *L. H. & Ethel Zoe Bailey* 196 (type in Herb. Field Mus.).

The type specimen is the only one seen with an inflorescence, but here probably belong the following leaf specimens, all except one from the vicinity of the Canal Zone: Barro Colorado Island, *Standley* 31294, 41104. Hills north of Frijoles, *Standley* 27440. Río Tapia, Prov. Panama, *Standley* 26159. Río Tecumen, Prov. Panama, *Standley* 26739. Puerto Obaldía, San Blas Coast, *Pittier* 4277.

The material listed above is rather puzzling. Offhand the leaf specimens appear to represent a single species, and probably they do, but there is considerable possibility also that two distinct species if not two genera are represented. The matter can be decided only when a larger number of flower-bearing specimens is available for study. In the type specimen the leaves are glabrous beneath and the petioles unarmed, but in several of the sterile specimens the leaves are conspicuously and densely puberulent beneath, at least along the nerves, and the petioles are decidedly aculeolate.

Anthurium chiapasense Standl., sp. nov.—Epiphytica, caudiculo brevi crasso, internodiis brevissimis, cataphyllis ferrugineis in fibras mox solutis; petiolus crassiusculus subteres 25 cm. longus fere 2 cm. infra apicem nodosus, nodo vix incrassato; lamina in sicco subcoriacea subfusca elongato-oblongo-sagittata ca. 30 cm. longa et prope medium 6.5–7.5 cm. lata, apice longe sensim attenuato-acuminata, basi profunde cordata, lobis posticis oblongis rotundato-obtusis retrorsis vel paullo extrorsis, sinu ca. 7 cm. alto angusto oblongo aperto, costa gracili utrinque prominente, nervis lateralibus primariis utroque latere supra basin ca. 9 angulo semirecto adscendentibus utrinque prominentibus secundariis paullo crassioribus remote a margine in nervum distinctum collectivum plus minusve irregularem conjunctis, lamina basi 5-nervia; pedunculus gracilis 30 cm. longus; spatha ut videtur oblonga atque ca. 3 cm. longa; spadix crasse 4 mm. longe stipitatus anguste cylindricus 6 cm. longus prope basin 5 mm. crassus, sursum paullo attenuatus obtusus.—Mexico: Mt. Ovando, Chiapas, April 4, 1936, *E. Matuda* 1562 (type in herb. Mo. Bot. Gard.; photograph in Herb. Field Mus.).

Anthurium chiriquense Standl., sp. nov.—Epiphytica, caudiculo brevi crasso, internodiis brevissimis; petiolus subteres laminam fere aequans 20–30 cm. longus crassiusculus ca. 8 mm. infra apicem geniculatus, nodo incrassato; lamina anguste elliptico-oblonga vulgo 29–35 cm. longa atque 7–10 cm. lata in sicco subcoriacea epunctata, apice obtusa atque subito cuspidato-acuminata, basi

subobtusa vel late cuneata, costa gracili utrinque prominente, nervis lateralibus primariis numerosis vix secundariis crassioribus angulo semirecto adscendentibus, ca. 5–9 mm. a margine in nervum distinctum collectivum conjunctis; pedunculi crassi ca. 45 cm. longi vulgo fere duplo petiolis longiores; spatha purpurascens oblongolanceolata ca. 6.5 cm. longa atque 1 cm. lata acuminata; spadix purpurascens graciliter cylindricus obtusus, interdum sursum paullo attenuatus, 12–25 cm. longus, ca. 7 mm. prope basin crassus.—Panama: In rain forest, Bajo Chorro, Boquete District, Prov. Chiriquí, alt. 1,800 meters, *Mrs. M. E. Davidson* 283 (type in Herb. Field Mus.), 312.

Related to *A. turrialbense* Engler, of Panama and Costa Rica, which differs in having relatively much narrower, punctate leaves.

Anthurium garagaranum Standl., sp. nov.—Planta grandis ut videtur epiphytica, caudice brevi crasso; petiolus crassus 40–60 cm. longus anguste sulcatus subteres ca. 1.5 cm. infra apicem geniculatus, nodo 7–8 mm. crasso; lamina profunde trilobata basi subtruncata, lobis lateralibus incurvo-falcatis 23–26 cm. longis 10–11 cm. latis obtusis vel subacutis, latere exteriore rotundatis, interiore fere rectis, costa ca. 4 cm. supra basin in nervos primarios 4 desinente, nervis crassis prominentibus fere ad apicem lobi productis, segmento medio ca. 36 cm. longo et 9 cm. lato vel ultra, longe angusteque acuminato, costa subtus crassa prominente, nervis primariis costalibus numerosis crassiusculis prominentibus angulo semirecto vel latiore divergentibus, prope marginem in nervum collectivum conjunctis; pedunculus ca. 25 cm. longus teres 5–7 mm. crassus; spatha lanceolato-linearis ca. 17 cm. longa prope basin 1.5 cm. lata; spadix gracilis caudiformis sessilis vel subsessilis ca. 17 cm. longus atque prope basin 9 mm. crassus, sursum paullo attenuatus.—Panama: Foothills of Garagará, Darién, at 30–500 meters, *Pittier* 5601 (type in U. S. Nat. Herb.).

The type material was determined by Krause as *Philodendron tripartitum* (Jacq.) Schott, a rather common Central American species which this plant does not greatly resemble in leaf form. It appears to be related closely to *Anthurium tripartitum* Engler, described from Barbacoas, Colombia. Engler's description agrees in most respects with the Panama plant, but there are enough discrepancies to make it evident that the latter is a distinct new species.

Anthurium gracilens Standl., sp. nov.—Epiphytica vel terrestris, caudice gracili ca. 4 mm. crasso brunnescente, internodiis elongatis; cataphylla lineari-attenuata brunnea decidua; petiolus gracillimus lamina paullo brevior 10–22 cm. longus 1–1.5 cm. infra apicem geniculatus, nodo gracili; lamina in sicco membranacea et vulgo laete viridis, subtus paullo pallidior, epunctata, ovato-elliptica ad ovato-oblonga 17–21 cm. longa 6.5–8 cm. lata cuspidato-acuminata, vix basin versus angustata, basi late rotundata atque emarginata vel subcordata, rare truncata, e basi 5-nervia, nervis primariis utroque latere ca. 9 angulo semirecto vel latiore adscendentibus tenerrimis, prope marginem in nervum collectivum tenerum fere regularem conjunctis; pedunculus ca. 11 cm. longus gracillimus; spatha lanceolato-oblonga viridis 1 cm. lata vel ultra; spadix graciliter 1 cm. longe stipitatus cylindricus obtusus, ca. 4.5 cm. longus et 5–6 mm. crassus.—Panama: Río Chiriquí Viejo Valley, Chiriquí, July 13, 1939, *Peggy White* 160 (type in Herb. Field Mus.; duplicate in Herb. Mo. Bot. Gard.). Bajo Mona, Río Caldera, Chiriquí, 1,500–2,000 meters, *Woodson, Allen & Seibert* 1026. Vicinity of Cerro Punta, Chiriquí, *P. H. Allen* 1531.

Somewhat similar to *A. pallens* Schott, of the same general region, which differs in its much narrower leaves, obtuse or rounded and not at all emarginate or subcordate at the base.

Anthurium silvigaudens Standl. & Steyerm., sp. nov.—Terrestris ca. metralis, caudice brevi ca. 1 cm. crasso cataphyllis magnis 8–9 cm. longis diutius persistentibus fibrosis dense obtectis, internodiis abbreviatis; petiolus crassiusculus 27 cm. longus evaginatus apice 1 cm. longe geniculatus; lamina ovato-cordata in sicco tenuis et fere membranacea, ca. 37 cm. longa atque 22 cm. lata, cuspidato-acuminata, basi profunde (ca. 11 cm.) cordata, lobis posticis late rotundatis intus protractis, sinu clauso angusto, e basi 7-nervia, nervo infimo intra lobum posticum nervos secundarios ca. 8 emittente, nervis primariis costalibus utroque latere ca. 8 ad vel fere ad marginem prolongatis; pedunculi breves 7 cm. tantum longi; spatha pallide viridis ovata vel lanceolato-ovata ca. 9.5 cm. longa atque 4–5 cm. lata longiacuminata, basi late amplexicaulis et cordata; spadix subsessilis (perfectus non visus) purpurascenti-viridis 1 cm. crassus.—Guatemala: Terrestrial in wet forest near Tactic, Dept. Alta Verapaz, alt. about 1,500 meters, April 5, 1939, *Paul C. Standley* 70505 (type in Herb. Field Mus.).

In most respects this is similar to *A. fraternum* Schott, also Guatemalan, but in that the leaves have 5 rather than 7 basal nerves, and there are other less important differences.

MARANTACEAE

Calathea ursina Standl., sp. nov.—Herba perennis acaulis ca. 35 cm. alta; folia 3–7 erecta, petiolo 13–18 cm. longo gracillimo ubique dense pilis fusco-brunneis patentibus longihirsuto fere 1 cm. infra apicem geniculato, nodo non incrassato; lamina membranacea elliptico-oblonga vel lanceolato-oblonga 11–17 cm. longa 4–5 cm. lata longe attenuato-acuminata, basi acuta, utrinque sat dense pilis longis plerumque patentibus hirsuta; pedunculus ca. 9 cm. longus dense longihirsutus; inflorescentia condensata ca. 5 cm. longa atque 3 cm. lata, bracteis luteis paucis tenuibus sublaxis omnibus pilis longis patentibus brunneis hirsutis, exterioribus late ovatis imbricatis 1.5–2 cm. longis, interioribus solemniter elongatis elevato-venosis usque 3 cm. longis acuminatis erectis.—Peru: On rising ground, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, February 20, 1935, *José M. Schunke* 294 (type in Herb. Field Mus.).

Local name, Bijahuillo. "Plants solitary."

MORACEAE

Brosimum Mello-Barretoi Standl., sp. nov.—Arbor 12-metralis ut videtur dense ramulosa, ramulis teretibus brunnescenti-ochraceis glabris, internodiis brevibus; stipulae attenuato-acuminatae 1 cm. longae minutissime puberulae vel fere glabrae; folia modica brevissime petiolata coriacea, petiolo crassiusculo usque 1 cm. longo glabro; lamina anguste oblonga vel lanceolato-oblonga 9–15 cm. longa 3–5 cm. lata subito breviterque acuminata, acumine ipso obtuso, basi paullo inaequali acuta ad late obtusa et saepe breviter contracta, glabra, supra in sicco brunnescens sublucida, costa venisque conspicuis sed vix elevatis, subtus paullo pallidior, costa crassiuscula fere plana, nervis lateralibus utroque latere ca. 15 angulo lato saepe fere recto abeuntibus fere rectis tenerrimis planis prope marginem arcuato-junctis, venulis arcte reticulatis sed non elevatis; capitulum fructiferum globosum breviter pedunculatum sordide brunneum 12 mm. diam.—Brazil: Matta, Fazenda da Cachoeira, Municipio Tombos, Minas Geraes, July 18, 1935, *H. Mello Barreto* 1658 (Jard. Bot. Bello Horizonte 16566; type in Herb. Field Mus.).

Local name, Bainha de espada. The material, although ample, is not in satisfactory state for study, as regards the inflorescences, but it seems properly referable to *Brosimum*, in which genus I have been unable to find a published name for it. It is a pleasure to name this tree for its collector, who has made one of the largest and best prepared series of specimens ever obtained by any botanical worker in Brazil.

Cecropia Garciae Standl., sp. nov.—Arbor 12-metralis; petiolus crassus 42 cm. longus et ultra subteres dense laxeque albo-lanatus; lamina magna crasse herbacea digitatim fere ad basin ca. 20-lobata, segmentis anguste oblongo-oblanceolatis ca. 45 cm. longis et 12 cm. latis, apice obtusis vel subrotundatis atque subito cuspidato-acuminatis, infra tertiam partem sensim ad basin angustatis integris, supra viridibus glabris, subtus albidis ubique dense tomento minuto arcte adpresso indutis, nervis lateralibus numerosis angulo semirecto vel paullo latiore adscendentibus rectis teneris prominentibus fere in marginem desinentibus apice abrupte sursum curvatis; inflorescentia feminea crasse 3 cm. longe pedunculata, spicis 15 vel ultra arcte sessilibus 11–14 cm. longis 8 mm. crassis apice obtusissimis.—Colombia: In edge of forest along coast, east side of Gorgona Island, Dept. Nariño, February 11, 1939, *E. P. Killip & Hernando García* 33221 (type in Herb. Field Mus.).

Noteworthy for the very numerous leaf segments, bright green above and covered beneath with a dense but minute and closely appressed tomentum.

Coussapoa Duquei Standl., sp. nov.—Arbor 30-metralis, trunco 1 m. diam., ramulis crassis fusco-ferrugineis in sicco rimosis sparse praesertim prope nodos hirto-pilosis, internodiis brevibus; folia modica longipetiolata crasse coriacea, petiolo crassiusculo 5–10 cm. longo hirtello vel glabrato; lamina late ovata vel elliptico-ovata 15–18 cm. longa 10–11 cm. lata obtusissima, basi rotundata et brevissime subpeltata, supra sublucida glabra, nervis manifestis sed non elevatis, subtus brunnescens ubique sat dense laxeque tomentosa, costa gracili elevata, nervis primariis lateralibus utroque latere ca. 13 gracilibus prominentibus rectis obliquis angulo semirecto adscendentibus in marginem desinentibus, nervis alteris fere aequicrassis parallelis interpositis, margine leviter undulato-crenato; capitula (in statu nimis juvenili tantum visa) in cymas breves parvas axillares petiolis breviores disposita pedunculata ut visa 5 mm. tantum diam., ramis pedunculisque dense molliter brunneo-pilosis.—Colombia: Palestina, Dept. Caldas, alt. 1,500 meters, *J. M. Duque* 1767 (type in Herb. Field Mus.).

The present species is similar to *C. Lawrancei* Standl., likewise Colombian, but in that the petioles and branches are copiously hirsute with long hairs.

Coussapoa incomitata Standl., sp. nov.—Arbor 20-metralis in statu juvenili epiphytica, ramulis teretibus crassis fuscis in sicco striatis primo tomentulosis, serius glabratis, internodiis brevissimis; stipulae parvae late ovatae subacuminatae 5 mm. tantum longae extus laxe pilis pallidis sericeae; folia parva petiolata crasse coriacea, petiolo gracili 2.5–3 cm. longo laxe araneoso-tomentoso, serius glabrato; lamina oblongo-obovata vel subcuneato-obovata 6–8 cm. longa 3–4.5 cm. lata apice rotundata, basin versus saepissime paullo angustata, basi ipsa anguste rotundata et vulgo breviter emarginata, supra glabra vel tantum ad costam sparse tomentulosa, costa nervisque subimpressis, sublucida, subtus grisea vel brunnescens, primo dense pilis laxis albis araneoso-tomentosa, glabrescens, costa gracili prominente, nervis lateralibus utroque latere ca. 6 obliquis angulo semirecto adscendentibus subarcuatis gracilibus elevatis, venis transversis ultimisque laxe reticulatis prominentibus; pedunculi feminei ad nodos aggregati simplices crassi sordido-puberuli vel glabrati, capitulis subglobosis densissime multifloris 6–7 mm. diam., perianthio in statu fructifero fere 2 mm. longo obovoideo apice rotundato sparse vel dense puberulo.—Brazil: Matta, Fazenda da Cachoeira, Municipio Tombos, Minas Geraes, July 29, 1935, *H. Mello Barreto* 1795 (Jard. Bot. Bello Horizonte 16810; type in Herb. Field Mus.).

An apparently well marked species, noteworthy for the small leaves and small, clustered fruiting heads. The local name is reported as Mata pau vermelho.

Coussapoa Schunkei Standl., sp. nov.—Arbor 15-metralis, trunco ca. 50 cm. diam., ramulis crassis sordide ochraceis vel brunnescentibus dense minute tomentellis atque ad nodos longipilosis, internodiis brevissimis; stipulae 7 cm. longae vel ultra longiattenuatae dense puberulae et pilis longis pallidis subadpressis indutae; folia modica petiolata coriacea, petiolo crassiusculo 4–5.5 cm. longo dense minute puberulo et sparse longipiloso; lamina deltoideo-ovata 12–16 cm. longa 8–10.5 cm. lata apicem obtusum versus sensim angustata, basi late rotundata et truncata vel subemarginata, supra in sicco fusco-brunnescens glabra, nervis manifestis sed vix elevatis, subtus pallide brunnescens, tomento minuto brunnescente densissime obtecta, primo sparse laxe praesertim ad nervos costamque araneoso-tomentosa, costa gracili elevata, nervis lateralibus utroque latere ca. 10 rectis angulo semirecto adscendentibus gracilibus in marginem desinentibus, basi 5-nervia, venis obscuris, margine integro vel subundulato; inflorescentiae masculae laxe cymosae ca.

8 cm. longae axillares fasciculatae, pedunculo gracili usque 4 cm. longo, ramis late patentibus dense minuteque puberulis atque sparse longipilosis, capitulis paucis globosis 2–3 mm. tantum diam. 2–4 mm. longe pedunculatis.—Peru: On river bank, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, January 27, 1935, *José M. Schunke* 130 (type in Herb. Field Mus.).

Local name, Uvilla. "Solitary; flowers cream; fruit brown, edible." Among Peruvian species, this is most closely related to *C. vellerea* Klotzsch, whose type was collected at Macora, Huánuco, by Ruiz and Pavón.

Pourouma chocoana Standl., sp. nov.—Arbor 8–10-metralis; folia magna longipetiolata subcoriacea, petiolo crasso 17 cm. longo dense scabro atque hispido-hirsuto; lamina ca. 25 cm. longa et 28 cm. lata basi profunde (3.5 cm.) aperte cordata, ca. ad medium trilobata, lobo medio late elliptico, costa media utroque latere nervos primarios ca. 12 rectos emittente, lobis lateralibus late ovatis breviter cuspidato-acuminatis, basi late rotundatis, lamina supra scabra et tactu asperrima in sicco fusco-brunnescente, subtus ubique tomento arcte adpresso albo dense obtecta; inflorescentia feminea cymosa multiramosa ca. 6 cm. longa atque 9 cm. lata multiflora 8 cm. longe pedunculata, pedunculo ramisque dense tomento adpresso sordido-brunneo indutis, pedicellis fructiferis crassissimis usque 5 mm. longis; fructus maturus elliptico-ovoideus 1.5 cm. longus 1 cm. latus paullo compressus obtusus dense sordideque brunneo-tomentellus.—Colombia: Dense forest near junction of Río Condoto and Río San Juan, Intendencia El Chocó, alt. 100–150 meters, April 20, 1939, *E. P. Killip* 35095 (type in Herb. Field Mus.).

POLYGONACEAE

Coccoloba caurana Standl., sp. nov.—Arbor 15-metralis, trunco 60 cm. et ultra diam., coma angusta, ramis erectis, cortice brunnescente, ramulis crassis dense foliatis ochreis magnis 2 cm. longis et ultra dense obtectis glabris; folia inter maxima breviter petiolata crasse coriacea, petiolo crasso glabro 2.5–4 cm. longo; lamina glabra oblonga 21–40 cm. longa 9–16 cm. lata apice obtusa et subito breviterque acuminato-contracta, basi subrotundata vel obtuse angustata, in sicco brunnescens, costa nervisque supra subimpressis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere ca. 11 prominentibus obliquis angulo acuto adscendentibus prope marginem arcuato-conjunctis, venis inconspicuis laxe reticulatis; flores dense racemosi, racemis ante anthesin

3.5 cm. longis axillaribus et dense fasciculatis, rhachi dense minute sordido-puberula, pedicellis brevissimis; perianthium glabrum ca. 3 mm. longum, segmentis ovalibus apice rotundatis; stamina exserta.—Venezuela: In forest on steep slope above the playa of Salto de Para, Medio Caura, State of Bolívar, alt. 200 meters, in 1939, *Llewelyn Williams* 11366 (type in Herb. Field Mus.).

Local name Arahueke. "Trunk branched from the base; flowers red, produced in March; fruits small and round." No fruits are present with the type specimen. The species is noteworthy for its exceptionally large leaves, almost perfectly oblong in outline.

Ruprechtia Tangarana Standl., sp. nov.—Frutex vel arbor 4–6-metralis, trunco 4–6 cm. diam., ut videtur dense ramosa, ramis crassis fuscis vel sordido-ochraceis lenticellatis, internodiis brevibus vel aliquanto elongatis glabris; folia breviter petiolata subcoriacea in sicco fusca, petiolo crassiusculo 7–10 mm. longo glabro; lamina lanceolato-oblonga vel elliptico-oblonga vulgo 6–21 cm. longa et 2.5–7.5 cm. lata, acuta usque longiacuminata, basi acuta vel subobtusa, lucida glabra, nervis venisque supra prominulis, costa gracili subtus elevata, nervis lateralibus utroque latere ca. 12 obliquis angulo semirecto adscendentibus irregularibus teneris prominentibus, venis prominulis arcte reticulatis; flores masculi graciliter breviter pedicellati parvi racemosi, racemis dense multifloris in axillis vel ad nodos defoliatos solitariis vel fasciculatis plerumque 2.5–4 cm. longis, floribus glabris, pedicellis filiformibus glabris ochreolis vix longioribus, staminibus exsertis; flores feminei in racemos breves densissimos multifloros sessiles usque 3 cm. longos dispositi, pedicellis brevissimis; calyx fructifer 1 cm. longus obtuse trigonus utrinque sparse minute sericeus, segmentis exterioribus ca. 4 mm. latis obovato-oblongis apice obtusis vel anguste rotundatis; fructus acute trigonus 6 mm. longus lucidus brunneus.—Peru: On river bank, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, January 25, 1935, *José M. Schunke* 115 (in fruit; type in Herb. Field Mus.); February 15, 1935, *Schunke* 255.

Local name Tangarana blanca. "Flowers white." Only two other species of *Ruprechtia* have been reported from Peru, and neither of these from Loreto. *R. Tangarana* is more closely related to *R. apetala* Wedd., which has shorter leaves, soft-pilose beneath, elongate staminate racemes, and a fruiting perianth 2.5 cm. long.

CARYOPHYLLACEAE

Stellaria limitanea Standl., sp. nov.—Herba ut videtur procumbens laxe ramosa, caulibus 30 cm. longis et ultra gracilibus nodosis fragilibus sat dense glanduloso-villosis, internodiis saepe foliis longioribus; folia petiolata herbacea parva, petiolo gracili glanduloso-villoso 2–4 mm. longo; lamina ovato-deltoidea 8–14 mm. longa 6–7 mm. lata (in statu bene evoluto probabiliter multo major) sensim longiacuminata, basi truncata vel breviter cordata, utrinque dense pilis longis viscidis villosa; pedicelli axillares solitarii 9–18 mm. longi glanduloso-villosi; sepala oblongo-ovata 5–6 mm. longa sensim acuminata tenuiter nervata hyalina viscido-villosula; petala non visa, nulla(?); capsula late ovoidea obtusa sepalis fere aequilonga lucida, stylis 3; semina suborbicularia 1 mm. lata ferruginea minute obtuseque tuberculata.—Mexico: Volcán de Tacaná, State of Chiapas, alt. 1,400 meters, March, 1939, *E. Matuda* 2775 (type in Herb. Field Mus.).

A relative of *S. nemorum* L., a widespread plant of Mexico and Central America, this is notable for its large flowers and unusually abundant and viscid pubescence.

MONIMIACEAE

Siparuna macra Standl., sp. nov.—Arbuscula gracilis 4-metralis, ramulis gracilibus teretibus dense minute stellato-puberulis, internodiis bene elongatis; folia parva petiolata membranacea, petiolo gracili 1–2 cm. longo minute stellato-puberulo; lamina oblongo-oblanceolata 5–11 cm. longa 1.5–3 cm. lata subito caudato-acuminata, basin versus sensim attenuata, remote inaequaliter denticulata, supra in sicco fusco-viridis sparse pilis minutis sessilibus stellatis conspersa tactu asperula, subtus fere concolor densius pilis similibus stellato-puberula, costa gracili prominente, nervis lateralibus utroque latere ca. 8 arcuatis angulo lato adscendentibus; inflorescentiae axillares e basi ramosae ca. 3 cm. longae, ramis simplicibus vel semel dichotomis gracilibus remote paucifloris sparse minuteque stellato-puberulis aliquanto scorpioideis, pedicellis usque 2.5 mm. longis; receptaculum 2–2.5 cm. latum et aequilongum sparse inferne stellato-puberulum vel fere glabrum, apice glabrum.—Costa Rica: Villa Quesada, Cantón de San Carlos, Prov. Alajuela, alt. 725 meters, edge of Caribbean rain forest, March 29, 1939, *Austin Smith* F1828 (type in Herb. Field Mus.).

"Stems arching, the bark light brown; leaves dark green, faintly shining above, paler beneath; flowers pale yellow." Among Costa Rican species this is simple of recognition because of the small and relatively narrow leaves, the very sparse and minute pubescence of the leaves, and the small receptacles.

CRUCIFERAE

Thlaspi mexicanum Standl., sp. nov.—Herba perennis caespitosa 4–10 cm. alta ubique glabra, caulibus erectis e radice incrassata pluribus; folia basalia parva longipetiolata, petiolo crassiusculo; lamina ovata, rhombico-ovata vel oblongo-elliptica vulgo 6–9 mm. longa et 3–5 mm. lata, apice obtusa vel anguste rotundata basi cuneata, integra vel remote undulato-dentata; folia caulina 5–9 mm. longa lanceolato-oblonga vel oblongo-ovata obtusissima, basi profunde cordata et amplexicaulia pallida integra; racemi pauci- vel multiflori sublaxi usque 2 cm. longi, pedicellis rectangule patentibus crassiusculis 3–4 mm. longis; sepala purpurascentia 1.5 mm. longa ovali-oblonga apice rotundata; petala alba angusta 2–2.5 mm. longa; siliculae cuneato-obovatae 5–6 mm. longae 4 mm. latae apice profunde emarginatae basi cuneatae sessiles angustissime supra medium alatae; stylus brevis alas terminales siliculae vix aequans.—Mexico: State of Nuevo León, abundant on meadows above timber line, peak of Cerro Potosí, Municipio de Galeana, July 21, 1935, *C. H. Mueller* 2244 (type in Herb. Field Mus.). Sparse in meadow below timber line, peak of Cerro Potosí, *Mueller* 2248.

In Payson's account of the genus *Thlaspi* (Univ. Wyo. Publ. Bot. 1: 145. 1926), this would fall, in his key, under *T. parviflorum* A. Nels., a species of Wyoming, which has decidedly narrower pods, obtuse or truncate at the apex. I have seen no other Mexican material of the genus, although some of the species might be expected to occur in the mountains of Chihuahua and Sonora.

ROSACEAE

Potentilla Knoblochii Standl., sp. nov.—Herba perennis humilis subacaulis; folia digitata pauca vel numerosa ca. 6 cm. longa, petiolis 2–5 cm. longis pilis longis albidis patentibus vel adscendentibus sat dense pilosis, alte lateque vaginatis; foliola plerumque 5 sessilia anguste oblonga vel oblanceolato-oblonga vulgo 1–2.5 cm. longa et 4–7 mm. lata, apice obtusa vel anguste rotundata et brevissime obtuse tridentata, basin subobtusam versus paullo angustata, supra griseo-viridia pilis longis adpresso-pilosa, subtus albida dense adpresso-tomentosa et pilis longis adpresso-pilosa vel sericea, supra partem tertiam basalem remote breviterque adpresso-serrata; pedunculi vix folia aequantes, interdum breviores, 1–3-flori, foliis 1–2 reductissimis onusti, pilis longis patulis pilosi; calyx dense pilis longis patulis pilosus fere 5 mm. longus, sepalis oblongo-ovatis acutis, bracteolis conformibus paullo brevioribus vel fere aequilongis;

petala ut videtur pallide lutea 5 mm. longa apice late rotundata vel subemarginata.—Mexico: Mojarachic, Chihuahua, May 4, 1938, *I. W. Knobloch* 5104 (type in Herb. Field Mus.).

Prunus Lundelliana Standl., sp. nov.—Arbor omnino glabra, ramulis gracilibus ferrugineis vel cinereo-brunnescentibus lenticellatis rimosis; folia petiolata subcoriacea, petiolo 1–1.5 cm. longo; lamina lanceolato-oblonga vel rarius lanceolata 7–10 cm. longa 2.5-4 cm. lata longiacuminata, acumine obtuso, basi acuta vel subacuta, supra lucida, in sicco fusco-brunnescens, subtus brunnescens glandulis 3 4 valde remote a basi positis orbicularibus onusta, integra; racemi axillares vel e nodis defoliatis nascentes laxe pauci- vel multiflori breviter pedunculati 3–5 cm. longi, pedicellis gracilibus 4–9 mm. longis; cupula calycis late campanulata fere 3 mm. lata et aequilonga basi obtusa, sepalis brevissimis late rotundatis; petala lata alba vix 2 mm. longa; stamina longiexserta; stylus crassiusculus 2.5 mm. longus.—Mexico: Hacienda Siltepec, State of Chiapas, January, 1938, *E. Matuda* 1906 (type in Herb. Field Mus.). Santa Rita, Mapastepec, Chiapas, January, 1938, *Matuda* 2016.

In most respects this agrees well with the description of *Prunus tetradenia* Koehne, of Veracruz. In that, however, two of the leaf glands are inserted near the base of the blade, rather than far remote from it, and the leaves are described as substantially larger than in *P. Lundelliana.*

LEGUMINOSAE

Acacia Gentlei Standl., sp. nov.—Rami crassi teretes fusco-ferruginei dense elongato-lenticellati minute puberuli vel glabrati; spinae binatae lucidissimae 4-4.5 cm. longae 5 mm. crassae teretes, apice anguste attenuatae, glabrae curvae; folia breviter petiolata, petiolo ca. 12 mm. longo infra apicem glandula elongata paullo elevata instructo dense minute puberulo, rhachi brevi dense puberula inter paria pinnarum elongato-glandulosa; pinnae 3-jugae 4–6 cm. longae, rhachi dense puberula vel pilosula; foliola plerumque 9–18-juga oblonga 8–13 mm. longa 3–5 mm. lata apice obtusissima mutica, basi solemniter obliqua rotundata, lucida glabra vel glabrata, margine tantum minutissime ciliolato, e basi palmatinervia, costa paullo excentrica utroque latere nervos paucos emittente, nervis venulisque utrinque prominulis vel prominentibus; flores spicati, spicis ad nodos solitariis pedunculatis ut videtur ca. 3 cm. longis, floribus arcte sessilibus; legumen graciliter 2–3 cm. longe stipitatum falcato-lineare ca. 21 cm. longum et 8 mm. latum valde compressum apice longissime et fere spiniforme attenuatum, basin versus longe angusteque attenuatum, glabrum, marginibus incrassatis obtusisque. —British Honduras: Without special locality, *Percy Gentle* 185 (type in Herb. Field Mus., received from Yale School of Forestry).

Called locally Red cockspur. This bullhorn acacia is remarkable for the form and especially the size of its pods, still immature in the specimen at hand. They are much longer than those of any related species.

Bauhinia Castilloi Standl., sp. nov.—Ramuli gracillimi pallidi glabri flexuosi; folia petiolata subcoriacea, petiolo gracillimo 18–22 mm. longo glabro; lamina integra anguste oblongo-lanceolata vel triangulari-oblonga 8.5–9.5 cm. longa 2.5–3.7 cm. lata apicem obtusum vel acutum versus sensim angustata, basi truncata vel rotundata, supra glabra sublucida in sicco griseo-viridis, nervis venisque prominulis, venulis arcte reticulatis, subtus grisea ubique dense pilis minutissimis adpressis induta, basi 7-nervia, nervis 3 mediis ad vel fere ad apicem protractis elevatis gracilibus, venulis laxe reticulatis; racemi axillares laxe multiflori ca. 4 cm. longi graciliter 3.5 cm. longe pedunculati, rhachi sparse hirtula, pedicellis fere filiformibus ad 14 mm. longis puberulis; calyx 18 mm. longus acuminatus griseo-puberulus ad anthesin uno latere fissus; petala fere linearia 18 mm. longa ad 2 mm. lata extus hirtella; stamen fertile 1, anthera 4 mm. longa.—British Honduras: Freshwater Creek Reserve, February 17, 1939, *A. Castillo* 48 (type in Herb. Field Mus.).

Known locally by the name Cow-tongue. An unusually well distinguished species, because of the simple, entire leaves, which appear glaucous on the lower surface on account of the dense, appressed covering of minute, whitish hairs.

Cassia potosina (Britt. & Rose) Standl., comb. nov. *Chamaecrista potosina* Britt. & Rose, N. Amer. Fl. 23: 283. 1930.—The following collection agrees well with the original description of this species, which was based upon *Purpus* 4832 from Minas de San Rafael, San Luis Potosí: Jaumave, Tamaulipas, in 1932, *H. W. von Rozynski* 546.

Inga chiriquensis Standl., sp. nov.—Arbor 4.5–9 m. alta, ramulis crassis subteretibus densissime pilis brevibus brunneis piloso-tomentosis, internodiis 3.5–4 cm. longis; folia vulgo 6–8-foliolata, petiolo crasso 3–3.5 cm. longo nudo dense piloso-tomentoso, rhachi 8–12 cm. longa dense hirtello-pilosa latiuscule alata 6–7 mm. lata, glandulis majusculis; foliola sessilia inaequalia subcoriacea elliptico-oblonga vel obovato-oblonga 12–15 cm. longa 5–8 cm. lata obtusa et apiculata, basi inaequali cuneato-obtusa, supra ubique, ad nervos densius, fulvo-hispidula, costa nervisque prominentibus, subtus dense molliter pilis lutescentibus patulis velutino-pilosula, costa nervisque elevatis et insigniter conspicuis; flores spicati, spicis brevibus densifloris crasse 3 cm. longe pedunculatis; legumen juvenile subteres multicostatum 9 cm. longum et ultra 5 mm. diam. dense molliter brunneo-tomentosum.—Panama: Volcán de Chiriquí, Boquete District, Prov. Chiriquí, alt. 2,100 meters, July 13, 1938, *Mrs. M. E. Davidson* 928 (type in Herb. Field Mus.).

Inga Davidsoniae Standl., sp. nov.—Arbor 4.5–9 m. alta dense ramulosa, ramulis crassiusculis brunnescentibus dense molliter piloso-tomentosis, internodiis brevibus; folia plerumque 6-foliolata, petiolo ca. 3 cm. longo dense breviter piloso, anguste alato, rhachi 3–5 cm. longa hirtella vel pilosula anguste alata vix ultra 2 mm. lata, glandulis parvis semiglobosis apice porosis; foliola subcoriacea oblonga vel ovato-oblonga, saepe lanceolato-oblonga, 5–8 cm. longa 2–3 cm. lata acuta usque anguste rotundata, basi obliqua obtusa vel anguste rotundata, supra lucida sparse praesertim ad costam hirtella vel fere glabra, venis prominulis arcte reticulatis, subtus in sicco brunnescentia sparse hispidula vel glabrata, costa nervisque prominentibus; flores ut videtur capitati; legumen anguste oblongum paullo curvatum 17 cm. longum 4 cm. latum sessile, apice truncatum et apiculatum, basi obliqua late rotundatum, subsparse fulvo-hispidulum vel glabratum, marginibus paullo incrassatis bicarinatis, seminibus ca. 16.—Panama: Volcán de Chiriquí, Boquete District, Prov. Chiriquí, alt. 2,250 meters, July 13, 1938, *Mrs. M. E. Davidson* 943 (type in Herb. Field Mus.).

Lupinus cacuminis Standl., sp. nov.—Herba perennis elata ca. 35 cm. alta, caule simplici vel pauciramoso erecto crassiusculo in sicco subangulato vel striato, sat dense foliato, dense pilis brevibus albidis arcte adpressis sericeo; folia modica, petiolo 3–5.5 cm. longo gracili sericeo 1–2 cm. longe vaginato, lobis liberis stipularum lineari-attenuatis ca. 8 mm. longis; foliola vulgo 7 lineari-oblanceolata 2–4 cm. longa 4–5 mm. lata acuta vel subacuminata, basin versus sensim angustata, supra viridia sparse breviter patulo-pilosa, subtus fere concoloria sat dense sericea; racemi densi multiflori 8–10 cm. longi 4 cm. lati, pedicellis ca. 8 mm. longis dense pilis adscendentibus pilosis; bracteae foliosae virides lineares persistentes ad 18 mm. longae persistentes; calyx extus dense sericeus, fere ad basin bilabiatus, segmentis lanceolato-linearibus, inferioribus 10 mm. longis, superioribus paullo brevioribus, tubo brevi basi fere symmetrice obtuso; vexillum fere 1.5 cm. longum apice late rotundatum, extus in medio prope apicem sparse laxe sericeum; legumen lineari-oblongum ca. 5 cm. longum atque 1.2 cm. latum ubique densissime pilis longis patentibus laxe molliterque pilosum, apice subito acutatum et longirostratum; semina ca. 5.—Mexico: State of Nuevo León, Sierra Madre Oriental, ascent of Sierra Potosí by north hogback, about 20 miles northeast of Galeana, abundant on the alpine meadow and in upper forest, alt. 3,450 meters, July 26, 1934, *C. H. & M. T. Mueller* 1257 (type in Herb. Field Mus.). Peak of Cerro Potosí, abundant in upper pine woods and above timber line, July 21, 1935, *C. H. Mueller* 2269.

The flowers are described as having a bluish lavender keel with a central white area broadest at the apex; or as red in middle upper lip and edge of lower lip, the ground color blue.

Lupinus LeSueurii Standl., sp. nov.—Herba perennis plus minusve caespitosa 12–15 cm. alta, caudice apice dense basibus persistentibus petiolorum obtecto; folia numerosa 4–8 cm. alta, petiolo gracili 2–5 cm. longo dense pilis longis patulis albidis piloso ca. 12 mm. longe vaginato, lobis liberis stipularum 4–5 mm. longis attenuato-linearibus; foliola vulgo 7 anguste obovata vel elliptico-oblanceolata 5–16 mm. longa 2.5–7 mm. lata, apice obtusa et cuspidato-apiculata, basin versus cuneato-angustata, utrinque sat dense pilis laxis albidis subadpressis pilosa; pedunculus gracillimus dense pilis longis patulis laxe pilosus erectus, racemo 3.5–6 cm. longo laxe multifloro, pedicellis ca. 3 mm. longis dense pilosis; calyx late campanulatus 4 mm. longus dense albo-pilosus, basi uno latere auctus et subcalcaratus, segmentis labii inferioris lanceolato-linearibus; bracteae deciduae lineari-lanceolatae alabastra subaequantes; corolla ut videtur intense caerulea, vexillo 7 mm. longo extus glabro. —Mexico: Salto Canyon, Babicora, Chihuahua, July 22, 1937, *Harde LeSueur* 1346 (type in Herb. Field Mus.). Mojarachic, Chihuahua, April 10, 1938, *I. W. Knobloch* 5070.

Lupinus Muelleri Standl., sp. nov.—Herba perennis elata superne ramosa ca. 60 cm. alta, ramis gracilibus rigidis teretibus densissime pilis albidis vel griseis brevibus adscendentibus vel adpressis sericeis, sat dense foliatis, internodiis brevibus; folia parva, petiolo gracili 10–14 mm. longo sericeo brevissime vaginato, lobis liberis stipularum lineari-attenuatis ca. 8 mm. longis; foliola vulgo 7 anguste oblanceolato-oblonga plerumque 13–18 mm. longa et 3–4 mm. lata acuta vel acutiuscula atque cuspidato-apiculata, utrinque dense griseo-sericea; racemus ca. 9 cm. longus et 4 cm. latus sublaxe multiflorus, pedicellis gracilibus usque 10 mm. longis dense patulo-pilosis; bracteae lineares inconspicuae deciduae; calyx extus dense albo-pilosus fere ad basin bilabiatus, segmentis lanceolato-linearibus subaequalibus, inferioribus 7 mm. longis; vexillum 1.5 cm. longum glabrum.—Mexico: State of Nuevo León, abundant throughout the pine woods, Las Canoas, on Cerro Potosí, Municipio de Galeana, July 17, 1935, *C. H. Mueller* 2205 (type in Herb. Field Mus.).

The flowers are described as varying from blue through lavender to purple.

Lupinus texensis Hook. f. **albus** Standl., f. nov.—E typo speciei tantum petalis albis differt.—Texas: Madisonville, April 16, 1932, *George L. Fisher* 3225 (type in Herb. Field Mus.).

White-flowered plants are not particularly rare among the lupines, and an albino form of the Texas bluebonnet was to be expected, although I find no record that it has been reported formally.

Phaseolus phanerophlebius Standl., sp. nov.—Herba volubilis, caule ramoso angulato gracili sparse pilis brevibus reflexis brunnescentibus piloso, internodiis brevibus; stipulae lanceolato-ovatae 5 mm. longae acutae erectae striato-nerviae; folia inter minora 3-foliolata, petiolo gracili 2–3 cm. longo retrorso-piloso; foliola crasse membranacea trinervia lineari-lanceolata vel anguste lanceolato-oblonga 3.5–6 cm. longa 8–15 mm. lata acuta vel attenuato-acuta, basi rotundata vel subtruncata, interdum prope basin subangulata, supra lucida glabrata, subtus sparse hispidula, pilis brunnescentibus plerumque patulis, venis prominentibus arcte reticulatis; racemi pauciflori ca. 12 cm. longe pedunculati nodosi ca. 3 cm. longi, bracteis striatis oblongo-lanceolatis 4 mm. longis; calycis glabrati tubus late campanulatus 4 mm. longis, segmentis inferioribus lineari-attenuatis 5–6 mm. longis; corolla intense caerulea 2.5 cm. longa.—Panama: Trailing herb on open hillside, Boquete, Prov. Chiriquí alt. 1,200 meters, June 25, 1938, *Mrs. M. E. Davidson* 757 (type in Herb. Field Mus.).

Phaseolus Rimbachii Standl., sp. nov.—Herba volubilis ramosa, caule gracili subtereti sparse saltem prope nodos pilis albis laxis brevibus patulis consperso; stipulae virides lanceolatae acutae striatae 3–4 mm. longae erectae persistentes; folia inter minora, petiolo gracili ca. 3 cm. longo fere glabro, rhachi 1–1.5 cm. longa, stipellis filiformibus 2–3 mm. longis; foliola breviter petiolulata rhombico-ovata 3–4.5 cm. longa 2–3.5 cm. lata acuta vel acuminata, basi latissime cuneata, membranacea, utrinque fere glabra, supra viridia, subtus glaucescentia; pedunculi 7–12 cm. longi graciles fere glabri, racemis paucifloris laxis usque 5 cm. longis, rhachi sparse laxe pilosa, pedicellis curvis sparse pilosis usque 8 mm. longis, bracteolis lanceolatis vix 2 mm. longis; calyx late campanulatus 3.5–4 mm. longus basi late rotundatus glaber subaequaliter breviter lobatus, lobis latis ciliatis; vexillum 10–12 mm. longum glabrum; ovarium glabrum apicem versus dilatatum, stylo 8 mm. longo dorso infra apicem dense barbato.—Ecuador: Interandine highland, alt. 2,800 meters, *A. Rimbach* 292 (type in Herb. Field Mus.).

"A perennial herb, climbing to a height of 5 meters." The glaucous or glaucescent under surface of the leaflets is a conspicuous feature of the species.

Pithecolobium Davidsoniae Standl., sp. nov.—Arbor 6–12-metralis fere glabra, ramulis teretibus gracilibus dense elevato-lenticellatis brunnescentibus, internodiis brevibus vel elongatis glabris vel obscure minute puberulis; folia parva plerumque 6-foliolata, rhachi petioloque nudis sparse minute puberulis vel fere glabris, petiolo eglanduloso, rhachi glandulis parvis depressis solis inter foliola onusta; foliola membranacea brevissime petiolulata inaequalia oblongo-elliptica vel elliptica 4–7.5 cm. longa 1.8–4 cm. lata acuta vel obtusa, basi inaequali acuta, glabra vel glabrata, subtus paullo pallidiora; flores viridescenti-lutei capitati, capitulis globosis 1.5 cm. diam. axillaribus vel e nodis defoliatis nascentibus, pedunculis 2–3 cm. longis glabris supra medium minute bracteatis; calyx glaber 2–2.5 mm. longus tubulosus, dentibus triangulari-ovatis tubo duplo brevioribus; corolla glabra tubulosa 6–7 mm. longa gracilis, lobis obtusis vix ultra 1 mm. longis.—Panama: Volcán de Chiriquí, Boquete District, Prov. Chiriquí, alt. 2,100 meters, July 12, 1938, *Mrs. M. E. Davidson* 900 (type in Herb. Field Mus.).

Swartzia phaneroptera Standl., sp. nov.—Arbor 15–30-metralis fere glabra, ramulis gracilibus subteretibus rimosis et lenticellatis; folia magna pinnata 5–7-foliolata ca. 35 cm. longa vel ultra, petiolo 7–18 cm. longo versus apicem latiuscule alato, paribus foliolorum 4–5.5 cm. distantibus, rhachi latiuscule alata 5–6 mm. lata; foliola subaequalia crasse membranacea oblonga, obovato-oblonga vel oblanceolato-oblonga 12–19 cm. longa 5–8 cm. lata subito attenuato-acuminata, basin versus paullo angustata, basi ipsa obtusa, supra in sicco olivacea lucida ad costam puberula, aliter glabra, nervis tenerrimis prominentibus, venulis prominulis arcte reticulatis, subtus paullo pallidiora glabra, costa tenui elevata, nervis lateralibus utroque latere ca. 7; inflorescentia (in statu fructifero tantum visa) 12 cm. longe pedunculata pendula(?), ut videtur pauciflora, pedicellis crassis fere 2 cm. longis; legumen (post dehiscentiam et vacuum tantum visum) 1.5–2 cm. longe stipitatum teres glabrum lucidum acuminato-rostratum 9–14 cm. longum, saepe hinc inde inter semina abrupte constrictum, ca. 1.5 cm. latum.—Honduras: Dept. Colón, Guarunta, Wispernini Camp, alt. 15–23 meters, in tropical rain forest, March, 1938, *Christine & Wolfgang von Hagen* 1394 (type in Herb. Field Mus.); also, from the same locality, but sterile, no. 1370.

Trifolium Schneideri Standl., sp. nov. Herba pumila dense caespitosa, caulibus plus minusve elongatis usque 8 cm. longis intertextis apice dense foliatis usque 3 mm. crassis, partibus infra apices dense stipulis vetustis obtectis; stipulae lineari-lanceolatae 3–4 mm. longae attenuatae; folia parva 3-foliolata, petiolo ad 1 cm. longo sparse adpresso-pilosulo; foliola subsessilia cuneato-obovata 5–6 mm. longa 4–5 mm. lata saepissime breviter emarginata glabra costato-nervia; capitula brevissime pedunculata foliis multo breviora plerumque 3–4-flora, bracteis brevissimis, floribus breviter pedicellatis; calyx ca. 4 mm. longus basi acutiusculus 10-nervius, sparse brevissime pilosulus, lobis lanceolato-linearibus rigidis attenuatis erectis tubo fere duplo longioribus; corolla glabra 5–6 mm. longa persistens; legumen glabrum turgidum apiculatum ca. 4 mm. longum. —Mexico: In cracks between rocks, exposed alpine slope of Cerro Potosí, alt. 3,750 meters, Municipio de Galeana, State of Nuevo León, July 20, 1938, *Richard A. Schneider* 942 (type in Herb. Field Mus.).

"A plant whose tough, much branched stems grow in the cracks between the rocks of the mountain top, leaving only the tips of the branches exposed. The tiny leaves and flowers hug the surface. Found only locally on the most exposed and rocky areas of the peak. Not abundant anywhere, flowering and even fruiting plants being difficult to locate. Observed only above timber line. Apparently nearly out of bloom at this date. Flowers pure, pale pink."

This is one of the many interesting plants collected in 1938 on Cerro Potosí by the Mexican Biological Expedition of Students of the University of Illinois. In habit and general aspect the plant bears no close resemblance to any other Mexican clover, and it is presumably one of the localized types confined, so far as now known, to this isolated high peak.

Vicia canifolia Standl., sp. nov.—Herba cirrhifera perennis ca. 60 cm. alta simplex, caule striato dense pilis laxis albis patulis piloso, internodiis plerumque ca. 2 cm. longis; stipulae lineares erectae striatae 5 mm. longae; folia sessilia ca. 6 cm. longa cirrho terminata, rhachi nuda dense albo-pilosula; foliola ca. 34 remota linearia vulgo 1-2 cm. longa 1-1.3 mm. lata obtusa et apiculata trinervia utrinque dense pilis laxis patulis albis pilosula, margine interdum revoluto; racemi axillares solitarii secundi 2.5 cm. longe pedunculati ca. 3 cm. longi dense multiflori (flores ad 25), pedicellis vix 2 mm. longis pilosulis; calyx pallidus pilosulus 3–3.5 mm. longus basi oblique rotundatus, dentibus subremotis angustis erectis; corolla ut videtur alba caeruleo tincta 1 cm. longa, petalis glabris.—Mexico: La Cima, Chihuahua, June 29, 1936, *Harde LeSueur* 714 (type in Herb. Field Mus.).

This may be only a variety of one of the normally green and glabrate species of Mexico. The abundant, whitish, lax and spreading pubescence gives the plant a pale coloring that is most distinctive.

RUTACEAE

Amyris tripetala Standl., sp. nov.—Arbuscula 3–6-metralis omnino glabra, ramulis gracilibus tortuosis nigrescentibus longitrorsum rugosis; folia alterna plerumque trifoliolata, interdum 1-foliolata, petiolo gracillimo 1-2 cm. longo, rhachi gracili nuda ca. 2 cm. longa; foliola parva usque 3 mm. longe petiolulata vel subsessilia inaequalia angustissime lanceolata 4–7 cm. longa 8–13 mm. lata, longissime attenuata, acumine ipso obtuso, basin versus sensim angustata, fere integra vel apicem versus sparse obscure crenulata, supra lucida, nervis venisque prominulis, subtus paullo pallidiora, costa tenui prominente, nervis lateralibus numerosis obliquis angulo ca. semirecto adscendentibus inaequalibus fere rectis prominentibus, venulis prominulis laxe reticulatis; inflorescentia terminalis cymoso-paniculata sublaxe multiflora breviter pedunculata 5.5 cm. longa atque 9 cm. lata vel minor, ramis primariis gracillimis plerumque late divergentibus, floribus trimeris cymose aggregatis, bracteis late ovatis minus quam 1 mm. longis, pedicellis vix ad 2 mm. longis; sepala rotundo-ovata apiculata 0.5 mm. longa; petala 2.5 mm. longa ovali-elliptica apice obtusissima 1-costata; stamina 3 petalis fere duplo longiora, antheris ovalibus 1 mm. longis.—Panama: Boquete, Prov. Boquete, alt. 1,140 meters, May 12, 1938, *Mrs. M.E. Davidson* 621 (type in Herb. Field Mus.).

"Flowers creamy white." In its trimerous flowers the tree is perhaps anomalous in the genus *Amyris*, to which it seems best referred. The narrow leaflets distinguish it from other Central American species.

Zanthoxylum citroides Standl., sp. nov.—Rami inermes teretes olivacei vel subochracei crassi aliquanto nodosi glabri, internodiis brevibus; folia modica glabra pinnata petiolata ut videtur 3–5-foliolata, petiolo 2.5–3 cm. longo superne late alato et 6–8 mm. lato, inferne nudo vel anguste marginato, rhachi inter foliola late alata et usque 1 cm. lata; foliola membranacea elliptico-oblonga 8 cm. longa atque 3 cm. lata vel minora acuminata, basi acuminata, sparse grosseque pellucido-punctata, in toto margine minute crenulata vel fere integra; flores parvi in axillis vel ad nodos defoliatos dense aggregati numerosi sessiles vel subsessiles trimeri; sepala rotunda ca. 0.8 mm. longa apice late rotundata; petala lata fere 2 mm. longa apice rotundata.—Mexico: North slope of Volcán de Tacaná, Chiapas, alt. 2,100 meters, April 2, 1939, *E. Matuda* 2961 (type in Herb. Field Mus.).

Marked by the combination of few acuminate leaflets, broadly winged leaf rachis, and densely crowded clusters of sessile flowers.

MELIACEAE

Trichilia Davidsoniae Standl., sp. nov.—Arbor fere omnino glabra, ramulis crassis teretibus, novellis rugulosis minutissime strigillosis, cito glabratis, internodiis ut videtur brevibus; folia 5-foliolata 5–5.5 cm. longe petiolata, petiolo rigido supra plano minute strigilloso, rhachi 4–5 cm. longa ad nodos paullo incrassata; foliola coriacea glabra 7–14 mm. longe petiolulata cuneato-oblongo-obovata 7–12 cm. longa 4.5–5.5 cm. lata, apice late rotundata vel subtruncata, basin versus longe sensim cuneato-angustata, supra lucidissima, costa prominente, nervis venisque prominentibus atque laxe reticulatis, margine plus minusve revoluto, subtus paullo pallidiora opaca, costa elevata, nervis lateralibus utroque latere ca. 8 angulo lato divergentibus fere rectis prope marginem arcuato-conjunctis prominulis, venis obscuris et non elevatis; inflorescentia ut videtur parva axillaris pauciflora petiolo brevior, floribus breviter crasseque pedicellatis; capsula 2 mm. longe crasseque stipitata subglobosa sparse puberula vel fere glabra lucida in sicco rugosa obtuse trigona fere 1.5 cm. longa 12 mm. lata, apice basique rotundata; semina ca. 9 mm. longa 5 mm. lata.—Panama: In rain forest, Bajo Chorro, Boquete District, Prov. Chiriquí, alt. 1,800 meters, February 28, 1938, *Mrs. M. E. Davidson* 347 (type in Herb. Field Mus.).

The material is incomplete and scant, having been taken from a branch found on the ground, but it is sufficient to illustrate an apparently quite distinct Central American species, marked by the few, cuneate-obovate, coriaceous, very lustrous leaflets.

DICHAPETALACEAE

Tapura bullata Standl., sp. nov.—Arbor parva, ramis teretibus rimosis fusco-ferrugineis, internodiis ca. 4 cm. longis ochraceo-tomentellis vel cito glabratis; folia magna brevissime petiolata coriacea solemniter bullata, petiolo crasso 10–14 mm. longo tomentello vel glabrato; lamina anguste lanceolato-oblonga ca. 22 cm. longa vel ultra et 5–6 cm. lata subsensim longiacuminata, basi valde inaequilaterali uno latere rotundata altero acuta, supra in sicco fusca lucida glabra, nervis venisque sat profunde impressis, subtus paullo pallidior sparse hinc inde hirtella vel fere glabra, costa prominente, nervis lateralibus utroque latere ca. 8 obliquis curvis prominentibus angulo semirecto vel paullo latiore adscendentibus prope marginem arcuato-junctis, venis elevatis laxe reticulatis; flores in petiolo infra basin laminae dense aggregati parvi ca. 2.5 mm. longi, sepalis anguste oblongis intus glabris extus dense pilis brevibus ochraceis patulis vel subadpressis dense hirtellis.—Colombia: Vicinity of Barranca Bermeja, Magdalena Valley, between Sogamoso and Colorado rivers, Dept. Sur de Santander, alt. 100–500 meters, January 11, 1935, *Oscar Haught* 1510 (type in Herb. Field Mus.).

Probably the first species to be reported for Colombia of this small genus, which ranges from the Guianas to Amazonian Peru. The large, conspicuously bullate leaves distinguish it from all other species.

EUPHORBIACEAE

Croton Skutchii Standl., sp. nov.—Arbor gracilis 27-metralis, ramulis crassis in sicco angulatis sparse minute adpresso-lepidotis; folia magna longipetiolata membranacea, petiolo crassiusculo 10–13 cm. longo dense vel sparse adpresso-lepidoto, apice glandulis 2 orbicularibus flavescentibus depressis onusto; lamina ovato-ovalis ca. 24 cm. longa atque 14 cm. lata acuta vel breviter acuminata, basi lata breviter cordata, supra viridis glabra, subtus paullo pallidior ubique minute sparse vel densius adpresso-lepidota, costa tenui prominente, nervis lateralibus utroque latere ca. 17 angulo latiusculo adscendentibus prominentibus teneris fere rectis prope marginem dichotomis, venis transversis remotis subparallelis, venulis inconspicuis laxe reticulatis; racemi axillares longissimi breviter pedunculati sat dense multiflori subcurvi 20–25 cm. longi ca. 1 cm. lati, floribus infimis 3–5 femineis, reliquiis numerossissimis dense aggregatis masculis; flos femineus usque 8 mm. longe pedicellatus, sepalis foliaceis late ellipticis 8 mm. longis ut videtur post anthesin paullo accrescentibus apice obtusis vel rotundatis utrinque densissime

lepidotis; ovarium pilosum, stylis repetite dichotomis; alabastra mascula ca. 2.5 mm. diam., calyce extus dense lepidoto ad medium lobato, lobis late ovatis obtusis; petala sepalis paullo longiora ciliata. —Costa Rica: In clearings, vicinity of El General, Prov. San José, alt. 670 meters, June, 1939, *Alexander F. Skutch* 4377 (type in Herb. Field Mus.).

Pera barbellata Standl. Field Mus. Bot. 8: 19. 1930.—When this species was published, a single collection was known, *Schipp* 201, from British Honduras. In more recent years several additional specimens have come to hand, and they may be reported as follows: British Honduras: Machaca, in forest, alt. 15 meters, a tree of 9 meters, the trunk 22 cm. in diameter, August, 1933, *Schipp* S578. All Pines, in secondary forest, at sea level, a tree of 12 meters, *Schipp* 568. —Guatemala: Santa Teresa, Subín River, Petén, April, 1933, *Lundell* 2686. La Libertad, Petén, April, 1933, *Lundell* 3067.—Mexico: Uvero, Oaxaca, near sea level, May, 1937, *L. Williams* 9412.

Regarding the Mexican tree Mr. Williams has supplied the following notes: Local name Palo prieto. A tree 21 m. tall, with narrow crown; trunk round, moderately straight, 40–70 cm. in diameter, unbranched for about 16 m.; bark 6–12 mm. thick, chocolate-brown with gray patches and with small scales; inner bark deep yellow. Sapwood white to deep yellow, darkening slightly on exposure to the air; heartwood distinctly defined, medium brown to chocolate-brown, composing about one-third of the wood; has a slightly unpleasant odor when freshly cut; used mostly for railroad ties. In forest on dry slopes and in low, slightly humid land.

Phyllanthus Millei Standl., sp. nov.—Frutex 2-metralis disticho ramosus, ramis subteretibus viridibus pallide lenticellatis, novellis angulatis dense puberulis vel minute villosulis, internodiis foliis brevioribus; folia parva biseriatim inserta brevissime petiolata tenuiter membranacea, petiolo tenui vix 1.5 mm. longo; lamina ovato-ovalis vel rotundato-ovalis 8–13 mm. longa 7–9 mm. lata apice late rotundata et interdum breviter emarginata, basi obtusa vel rotundata, utrinque sparse sordido-puberula, nervis lateralibus utroque latere ca. 4 arcuatis inconspicuis; flores axillares solitarii vel saepius paucifasciculati, pedicellis filiformibus solemniter inaequalibus minute puberulis usque 4 mm. longis; sepala 5 ovalia vel ovata fere 2 mm. longa apice obtusissima pallido-marginata.—Ecuador: In regione tropica, ad Bahía, January, 1938, *Luis Mille* 1061 (type in Herb. Field Mus.).

AQUIFOLIACEAE

Ilex chiriquensis Standl., sp. nov.—Arbor omnino glabra, ramis crassis ochraceis teretibus, internodiis brevibus; folia modica petiolata crasse coriacea, petiolo crasso canaliculato 8–12 mm. longo; lamina in sicco subfusca rotundato-elliptica vel late cuneato-obovata 3.5–6 cm. longa 3–5 cm. lata apice late rotundata et subemarginata, basi obtusa vel late cuneata, infra medium integra, supra medium obscure et brevissime remoteque adpresso-crenata, crenis utroque latere ca. 4, supra lucida, costa prominula, nervis manifestis sed non elevatis, subtus opaca sparse nigro-punctata, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 4 angulo lato divergentibus remote a margine irregulariter conjunctis, venis vix prominulis laxe reticulatis; flores in axillis vel ad nodos defoliatos fasciculati, pedicellis crassis usque 3 mm. longis (et ultra?); calyx 1.5–2 mm. altus breviter lobatus, lobis late rotundatis.—Panama: In rain forest, Bajo Chorro, Boquete District, Prov. Chiriquí, alt. 1,800 meters, February 1, 1938, *Mrs. M. E. Davidson* 243 (type in Herb. Field Mus.).

The available material is scant, consisting of a small branch found upon the ground, with a few leaves and flower buds. The leaves are quite unlike those of any species previously known from southern Central America, being unusually wide, broadly rounded at the apex, and few-nerved.

Ilex Davidsoniae Standl., sp. nov.—Arbor humilis omnino glabra, ramis subteretibus in sicco fuscis lenticellis pallidis elevatis conspersis, internodiis aliquanto elongatis; folia modica breviter petiolata coriacea in sicco fusca, petiolo crasso 5–7 mm. longo canaliculato; lamina oblongo-elliptica ca. 9.5 cm. longa et 4.5 cm. lata subabrupte acuminata, acumine ipso obtuso, basi obtusa, fere ad basin grosse inaequaliter crenata (dentibus utroque latere ca. 14), supra lucida, costa impressa, nervis fere obsoletis, costa subtus elevata, nervis lateralibus utroque latere ca. 8 angulo lato divergentibus; flores feminei numerosi umbellati, umbellis in axillis aggregatis paucifloris breviter pedunculatis, pedicellis fructiferis crassis angulatis 3–5 mm. longis; calyx sub fructum patens 2.5 mm. latus incrassatus brevissime lobatus, lobis latis rotundatis subapiculatis; fructus immaturus ellipsoideo-globosus 4 mm. longus stylo magno depresso coronatus.—Panama: In rain forest, Bajo Chorro, Boquete District, Prov. Chiriquí, alt. 1,800 meters, January 25, 1938, *Mrs. M. E. Davidson* 166 (type in Herb. Field Mus.).

RHAMNACEAE

Gouania hypoglauca Standl., sp. nov.—Frutex scandens 5-metralis, ramis crassis teretibus brunneis sat dense breviterque pilosis, pilis patulis brunneis, internodiis foliis multo brevioribus; folia modica petiolata subcoriacea, petiolo crassiusculo 7–8 mm. longo dense brunneo-hirtello; lamina oblongo-ovata vel ovali-ovata 5.5–8.5 cm. longa 3–4.5 cm. lata subito acuta vel breviter acuminata, basi truncata vel emarginata, supra in sicco fusca sparse pilis patulis brunnescentibus pilosa, costa nervisque anguste impressis, subtus griseo-fulvida ubique tomento arcte adpresso densissime obtecta, ad nervos adpresso-pilosa, e basi trinervia, costa gracili prominente, nervis lateralibus utroque latere ca. 3 angulo semirecto adscendentibus, margine remote inconspicue adpresso-crenato; flores spicati, spicis (juvenilibus cum alabastris tantum visis) dense multifloris breviter pedunculatis racemose paniculatis.—Costa Rica: Villa Quesada, Cantón de San Carlos, Prov. Alajuela, alt. 750 meters, edge of Caribbean rain forest, April 14, 1939, *Austin Smith* F1952 (type in Herb. Field Mus.).

From all other *Gouania* species of Central America, the present Costa Rican plant is distinguished by the very dense, yellowish gray, closely appressed tomentum of the lower leaf surface.

TILIACEAE

Sloanea Picapica Standl., sp. nov.—Arbor 15-metralis ut videtur dense ramulosa, ramulis sat gracilibus et dense foliatis fusco-ferrugineis pallido-lenticellatis minutissime sericeis vel fere glabris; folia parva coriacea breviter petiolata in sicco subfusca, petiolo subgracili 5–7 mm. longo glabrato; lamina lanceolato-ovata vel elliptico-oblonga 5–7 cm. longa 2–3 cm. lata subabrupte longe anguste acuminata, acumine ipso obtuso, basi obtusa vel subacuta, glabra, supra sublucida, nervis venisque non elevatis, subtus paullo pallidior, costa gracili prominente, nervis lateralibus utroque latere ca. 7 teneris prominentibus angulo lato adscendentibus remote a margine arcuato-conjunctis, venis obscuris laxe reticulatis; flores axillares solitarii vel breviter racemosi, pedicellis fructiferis rectis ca. 1 cm. longis minutissime hirtellis; capsula ellipsoidea 4-valvata monosperma 1.5–2 cm. longa basi et apice obtusa dense purpurascenti-tomentosa, ubique dense setis glabris purpurascentibus usque 7 mm. longis induta; semen ovale 1 cm. longum 6 mm. latum.—Honduras: Tropical rain forest, alt. 15–23 meters, Guarunta, Wispernini Camp, Dept. Colón, March, 1938, *Christine & Wolfgang von Hagen* 1390 (type in Herb. Field Mus.).

Local name, Picapica. In its small, glabrous, long-acuminate leaves in combination with the form of its fruit this is altogether unlike any other species of *Sloanea* known from Central America.

MALVACEAE

Sida turneroides Standl., sp. nov.—Herba perennis ca. 30 cm. alta, caulibus solitariis vel pluribus gracilibus rigidis simplicibus vel pauciramosis erectis viridibus minutissime pilis stellatis sessilibus conspersis, internodiis saepissime foliis paucis longioribus; stipulae filiformes 6–8 mm. longae; folia parva breviter petiolata membranacea, petiolo gracili 4–7 mm. longo stellato-puberulo; lamina anguste oblonga usque ovali-oblonga 2–3.5 cm. longa 1–1.5 cm. lata, apice obtusa vel anguste rotundata atque mucronata, basi obtusa vel rotundata, grosse inaequaliter serrata, supra laete viridis sparse setuloso-pilosa vel fere glabra, subtus pallidior pilis minutis stellatis sparse conspersa; flores axillares et solitarii vel ad apicem caulis pauci et aggregati, pedunculis 7 mm. longis vel brevioribus crassiusculis minute stellato-puberulis; calyx late campanulatus 6–7 mm. longus angulatus extus sparse minute stellato-pubescens, ad costas adpresso-pilosus, fere ad medium lobatus, lobis late triangularibus acutis vel acuminatis erectis; petala ca. 12 mm. longa glabra; carpella fructus 7 glabrata 3 mm. longa obtusa, apice spinis 2 rigidis erectis 1.5 mm. longis onusta.—Mexico: Jaumave, Tamaulipas, in 1932, *H. W. von Rozynski* 514 (type in Herb. Field Mus.).

In general appearance the plant has some resemblance to *Sida acuta* Burm., and the leaves probably are distichous as in that species.

BOMBACACEAE

Hampea latifolia Standl., sp. nov.—Arbor humilis, ramulis crassiusculis glabratis sed pilis paucis remotis parvis stellatis conspersis, internodiis brevibus; folia magna longipetiolata membranacea, petiolo tereti usque 16 cm. longo crassiusculo glabrato; lamina rotundo-cordata 15–21 cm. longa 15–20 cm. lata acuta, apice ipso obtuso, basi profunde cordata, obscure 3-angulata, margine integro vel subundulato, supra fere glabra sed praesertim ad venas pilis paucis parvis sessilibus stellatis conspersa, subtus paullo pallidior, subdense pilis parvis stellatis induta, basi 7-nervia; flores in axillis 2–4-fasciculati, pedicellis crassiusculis usque 1.5 cm. longis apicem versus paullo incrassatis dense stellato-furfuraceis, pilis sessilibus vel ex parte stipitatis; calyx 1 cm. longus vel paullo ultra extus densissime albide stellato-tomentellus in anthesi irregulariter breviter lobatus; petala ca. 3.5 cm. longa apice obtusa vel late subtruncata atque ad 2 cm. lata inaequilateralia remote fusco-punctata, latere altero densissime stellato-furfuracea; stamina numerosissima petalis paullo breviora.—Guatemala: Finca San José Nil, Retalhuleu, August 23, 1936, *W. R. Hatch & C. L. Wilson* 383 (type in Herb. Field Mus.).

In the writer's key to the species of *Hampea* (Journ. Wash. Acad. Sci. 17: 395. 1927) this would run at once to *H. platanifolia* Standl., a plant of the Pacific lowlands of Costa Rica. That is evidently distinct in its more abundant, coarse, rather than close and more or less furfuraceous, pubescence.

GUTTIFERAE

Clusia conferta Standl., sp. nov.—Arbor omnino glabra, ramulis crassis, internodiis brevibus; folia magna fere sessilia coriacea, petiolo ca. 1 cm. longo sed late usque ad basin alato; lamina oblonga vel aliquanto cuneato-oblonga 21–24 cm. longa 9 cm. lata, apice rotundata, basin versus paullo angustata, basi ipsa late cuneata, in sicco brunnescens, nervis supra manifestis sed non elevatis, subtus concolor, costa crassa elevata, nervis lateralibus utroque latere numerosis tenerrimis angulo latiusculo abeuntibus; inflorescentia terminalis capitato-congesta 5 cm. longe pedunculata, floribus ca. 9 sessilibus, bracteis late ovatis coriaceis concavis arcte adpressis ca. 8 mm. longis apice obtusis vel rotundatis; sepala 4 decussata crasse coriacea rotundata, saepe latiora quam longa, apice late rotundata; ovarium magnum subglobosum, columna stylari crassa fere 4 mm. longa 2.5 mm. crassa, stigmatibus 6 ovato-ovalibus 2 mm. longis minutissime papillosis.—Guatemala: Banks of Río Dulce, Dept. Izabal, March 28, 1939, *C. L. Wilson* 401 (type in Herb. Field Mus.).

Clusia orthoneura Standl., sp. nov.—Arbor 12–18-metralis, trunco ut dicitur 5–7.5 cm. diam., ramulis subgracilibus rugosis ferrugineis, in sicco transverse rugulosis vel rimosis, internodiis plerumque brevibus; folia inter minora petiolata coriacea, petiolo crassiusculo 8–12 mm. longo; lamina anguste lanceolato-oblonga utrinque fere aequaliter angustata 6.5–9.5 cm. longa 1.8–3.5 cm. lata, apicem versus sensim attenuata, apice obtuso vel acuto, basin versus sensim attenuata, costa nervisque supra manifestis sed non elevatis, subtus concolor, costa tenui basin versus elevata sursum evanescente, nervis lateralibus obscuris et non elevatis angulo angustissimo adscendentibus, cum costa fere parallelis, utroque latere ca. 7; inflorescentia terminalis 1–3-flora 2 cm. longe pedunculata

lata, pedicellis crassis compressis ca. 1.5 cm. longis, bracteis concavis latissime ovatis 6–7 mm. longis obtusis; sepala 4, exteriora 13 mm. longa et bene latiora apice late rotundata arcte adpressa, interiora 8 mm. tantum longa; petala 2 cm. longa et ultra ca. 2.5 cm. lata; columna staminalis 8 mm. alta 7 mm. crassa, staminibus ca. 20, filamentis crassis ca. 6 mm. longis, antheris recurvis paullo ultra 2 mm. longis.—Colombia: Region of Chapón, State of Boyacá, 100 miles northwest of Bogotá, in low, dense forest, alt. 1,080 meters, June 2, 1932, *A. E. Lawrance* 131 (type in Herb. Field Mus.).

"Flowers pinkish white with yellow stamens. An epiphytic tree, growing high up on the broken trunk of another forest giant." The species is noteworthy for the unusually narrow leaves with but few nerves running almost parallel with the costa.

COCHLOSPERMACEAE

Cochlospermum trilobum Standl., sp. nov.—Frutex metralis, ramulis teretibus longitrorsum in sicco rugosis ferrugineis pilis patulis brevibus sat dense pilosulis; folia modica longipetiolata membranacea, petiolo gracillimo 3–6 cm. longo pilosulo; lamina 3–6 cm. longa 4–8.5 cm. lata, basi profunde aperte cordata, profunde triloba e basi trinervia, supra viridis sparse breviter pilosa, subtus pallidior dense velutino-pilosa, lobis subaequalibus, posticis late patentibus ellipticis vel ovato-ellipticis apice obtusis vel rotundatis inaequaliter adpresso-serratis; pedicelli 7–15 mm. longi minute puberuli; sepala inaequalia 17 mm. longa late oblonga usque late elliptica apice late obtusa vel rotundata dense minutissime puberula; petala ca. 3 cm. longa; antherae ca. 5 mm. longae lineares; capsula ovoidea 5.5 cm. longa 3 cm. lata acuta, longitrorsum dense striata.—Bolivia: Roboré, alt. 416 meters, in dry soil on pampas, October, 1934, *Martín Cárdenas* 2970 (type in Herb. Field Mus.).

Apparently this is an unusually well marked species, quite unlike any of which I have seen material or description. Characteristic are the trilobate rather than 5-lobate or digitate leaves. The stature also may be distinctive, although the common Central American *Cochlospermum vitifolium*, while usually a small or rather large tree, often flowers when only one or two meters high.

THYMELAEACEAE

Daphnopsis Mello-Barretoi Standl., sp. nov.—Frutex metralis, ramis gracilibus teretibus ferrugineis lenticellis parvis pallidis conspersis, novellis densissime pilis brevibus ochraceis adscendentibus tomentosis, internodiis abbreviatis; folia parva breviter petiolata crasse membranacea vel subcoriacea, petiolo crasso 3–4 mm. longo; lamina late oblonga vel ovali-oblonga 3–5 cm. longa 1.5–2.5 cm. lata apice rotundata, basi obtusa vel subrotundata et breviter subitoque contracta, supra sat dense pilis plerumque patulis hirtello-pilosa, nervis inconspicuis, subtus paullo pallidior dense molliterque pilosa, costa tenui prominente, nervis lateralibus utroque latere ca. 5 arcuatis angulo lato adscendentibus, venulis prominulis laxiuscule reticulatis; inflorescentiae parvae numerosae pauciflorae, vel elongatae multiflorae et racemiformes, ramis dense ochraceo-pilosis, floribus breviter crasseque pedicellatis; calyx ad basin fructus persistens 2.5–3 mm. longus dense tomentulosus, lobis oblongo-ovatis acutis; stylus brevis, stigmate globoso-capitato; fructus late ellipticus glaber 1 cm. longus 7 mm. latus basi et apice rotundatus.—Brazil: Sujo, Jardim Botanico, Bello Horizonte, uncommon, January 8, 1934, *H. Mello Barreto* 7556 (Jard. Bot. Bello Horizonte 21723; type in Herb. Field Mus.).

Evidently related to *D. brasiliensis* Mart., which differs normally in having much larger and more elongate leaves, conspicuously narrowed at each end.

MYRTACEAE

Calyptranthes Killipii Standl., sp. nov.—Frutex 2.5 m. altus, ramulis subteretibus tortuosis fuscis vel fusco-griseis, internodiis brevibus, primo sparse minute ferrugineo-sericeis cito glabratis; folia modica breviter petiolata coriacea, petiolo crassiusculo 5–6 mm. longo glabrato; lamina elliptica vel obovato-elliptica 6–7.5 cm. longa 2.5–3.5 cm. lata apice obtuse contracta et abrupte caudato-acuminata, acumine usque 13 mm. longo angusto subobtuso, basi cuneato-acuta vel late acuta, supra in sicco griseo-olivacea glaberrima dense minute puncticulata, costa anguste impressa, nervis venisque occultis, subtus in statu juvenili ferruginea et dense arcte sericeo-tomentosa, cito glabrata vel sparse minuteque griseo-sericea, costa gracili elevata, nervis lateralibus obsoletis, margine subrevoluto; flores parvi cymoso-paniculati, cymis paucifloris ca. 1 cm. longis et fere 2 cm. latis basi trichotomis, floribus sessilibus vel breviter pedicellatis, bracteis minutis; calyx ante anthesin obovoideus 2.5–3 mm. longus apice rotundatus dense minutissime ferrugineo-sericeus.—Colombia: In tidal thicket, Buenaventura Bay, Dept. El Valle, May 4, 1939, *E. P. Killip* 35514 (type in Herb. Field Mus.).

Eugenia choapamensis Standl., sp. nov.—Arbor 12-metralis, ramis teretibus fusco-griseis glabris, internodiis brevibus vel rarius elongatis; folia majuscula breviter petiolata subcoriacea, petiolo crassiusculo 5–7 mm. longo late canaliculato; lamina anguste oblonga vel lanceolato-oblonga 12–16 cm. longa 4–5.5 cm. lata acuta vel acuminata, acumine obtuso, basi acuta, glabra, supra in sicco fusca, costa basin versus subimpressa, nervis obscuris, subtus pallidior brunnescens, costa gracili elevata, nervis lateralibus utroque latere ca. 10 angulo lato abeuntibus teneris prominentibus fere rectis remote a margine arcuato-conjunctis; flores axillares vel saepius e nodis defoliatis nascentes, interdum ut videtur breviter racemosi, pedicellis 10–13 mm. longis rigidis, bracteis latis vix 1 mm. longis patentibus; fructus ellipsoideo-oblongus teres vulgo 2–2.5 cm. longus 8–12 mm. latus glaber, basi et apice obtusus, calycis lobis apice fructus persistentibus vix 2 mm. longis late deltoideo-ovatis apice rotundatis.—Mexico: Near stream in arroyo, San Juanito, Distrito Choapam, State of Oaxaca, alt. 375 meters, April 1, 1938, *Ynes Mexia* 9254 (type in Herb. Field Mus.). In original forest, trail from San Juanito to La Trinidad, alt. 460 meters, April 13, 1938, *Mexia* 9296.

"Flowers white; mature fruit black, edible; bark thin, grayish outside, reddish within." In most respects *E. choapamensis* resembles *E. pleurocarpa* Standl., of the State of Jalisco, but that has smaller and relatively broader leaves, and conspicuously costate fruit.

MELASTOMACEAE

Blakea bella Standl., sp. nov.—Arbor, ramulis gracilibus teretibus pallide brunneis rimosis, internodiis brevibus vel aliquanto elongatis, minute sparse vel subdense stellato-furfuraceis, serius glabratis; folia modica petiolata crasse membranacea, petiolo 1.5–3 cm. longo crassiusculo sparse minuteque stellato-furfuraceo; lamina triplinervia elliptico-oblonga vel anguste elliptica 10–24 cm. longa 4–8 cm. lata subabrupte cuspidato-acuminata, acumine ipso obtuso, basi acuta vel subobtusa, supra glabra densissime pallido-puncticulata, nervis venisque non elevatis, subtus fere concolor, in statu juvenili sparse minute stellato-furfuracea, cito glabrata et in statu adulto fere omnino glabra, nervis primariis teneris prominentibus, venis transversis obscuris; flores axillares solitarii crasse 6–8 mm. longe pedicellati, involucro basi acutiusculo; bracteae exteriores alte connatae extus sparse minute stellato-furfuraceae vel fere glabrae 1.5–2 cm. latae fere 2.5 cm. longae, parte libera ovato-rotundata breviter acuminata, bracteis interioribus omnino coalitis; calyx ca. 16 mm. longus et apice 2.2 cm. latus, lobis brevissimis latioribus quam longis apiculatis extus minute stellato-furfuraceis; petala ut videtur rosea 3 cm. longa latissima apice truncata vel late rotundata; antherae late oblongae 5–6 mm. longae, filamentis crassis aequilongis.—Guatemala: Bank of Río Dulce, Dept. Izabal, March 28, 1939, *C. L. Wilson* 402 (type in Herb. Field Mus.); February 6, 1939, *Wilson* 161.

Doubtless this is a showy and handsome tree, because of its abundance of large flowers. The foliage appears glabrous to the naked eye, and is almost so in fact when the leaves are fully developed.

Centronia grandiflora Standl., sp. nov.—Arbor 6-metralis et ultra, ramis obtuse tetragonis dense breviter setoso-pilosis brunneis, internodiis elongatis; folia magna longipetiolata membranacea, petiolo 3.5–7.5 cm. longo dense brunneo-setoso-piloso; lamina subintegra elliptica vel oblongo-elliptica ut videtur 16–25 cm. longa, 7–10 cm. lata, sensim longiattenuata, basi obtusa vel anguste rotundata et breviter emarginata, supra in sicco cinereo-viridis glabra minute puncticulata, nervis venisque manifestis, ut videtur in vivo bullata, subtus brunnescens sat dense minute stellato-pubescens et setoso-pilosa, serius glabrata, 7-plinervia, venis elevatis arcte reticulatis; inflorescentia terminalis pauciflora 5 cm. longe pedunculata, pedicellis crassis ca. 7 mm. longis dense ferrugineo-pilosis; calyx in alabastro 1.5 cm. longus 1 cm. latus densissime pilis longis brunneis intertextis indutus, apice breviter mammillatus; petala glabra late obovata 2 cm. longa apice late rotundata.—Panama: In rain forest, Bajo Chorro, Prov. Chiriquí, alt. 2,100 meters, March 2, 1938, *Mrs. M. E. Davidson* 360 (type in Herb. Field Mus.).

The other Central American species of the genus, *Centronia phlomoides* Triana of Costa Rica, has a calyx only 11–12 mm. long, and petals half as large as those of *C. grandiflora.*

CLETHRACEAE

Clethra obliquinervia Standl., sp. nov.—Ramuli crassi dense stellato-pilosi et tomentelli, internodiis brevissimis; folia mediocria petiolata coriacea in sicco brunnescentia, petiolo crassiusculo 1.5–2 cm. longo dense breviter brunneo-piloso; lamina oblanceolato-oblonga 8–10 cm. longa 2.5–4 cm. lata apice rotundata, basin versus longe sensim attenuata, basi ipsa cuneata vel subobtusa, supra sublucida, fere glabra sed pilis paucis minutis stellatis remotis conspersa, costa nervisque impressis, subtus albida ubique tomento minuto stellato densissime obtecta, nervis lateralibus obliquis utroque latere ca. 12 teneris prominentibus angulo semirecto adscendentibus, venis obscuris; racemi fasciculati vel breviter paniculati numerosi usque 11 cm. longi breviter pedunculati laxe multiflori, rhachi dense breviter brunneo-stellato-pilosa, pedicellis omnibus brevibus vix ad 3 mm. longis, bracteis lineari-subulatis patentibus calycem aequantibus; calyx dense tomentellus 3.5 mm. longus, lobis oblongo-ovatis obtusis; petala calyce bene longiora glabra ciliata; ovarium dense adpresso-pilosum.—Mexico: Buena Vista, Escuintla, Chiapas, January, 1938, *E. Matuda* 1894 (type in Herb. Field Mus.).

LOGANIACEAE

Buddleia Matudae Standl., sp. nov. Ramuli obtuse tetragoni dense brunneo-stellato-tomentelli, internodiis superioribus brevibus; folia modica petiolata firme membranacea, petiolo crassiusculo 1.5–3 cm. longo dense stellato-tomentello; lamina oblongo-ovata vel lanceolato-oblonga 8–13 cm. longa 2.5–6 cm. lata sensim vel subito longiacuminata, basin versus sensim angustata vel interdum cuneato-acuta, supra in sicco fusca sparse pilis minutis stellatis conspersa, subtus sordide brunnescens densissime tomento stellato sublaxo obtecta, fere integra vel inconspicue crenulata, costa subtus prominente, nervis lateralibus utroque latere ca. 11 obliquis prominentibus prope marginem arcuato-conjunctis; flores parvi in capitula globosa densissime multiflora 4–7 mm. lata breviter pedunculata dispositi, capitulis racemosis, racemis paniculatis, paniculis late pyramidalibus ca. 10 cm. longis atque 15 cm. latis breviter pedunculatis, ramis dense stellato-tomentosis; calyx fere 2 mm. longus extus laxe stellato-tomentellus, lobis oblongis vel ovato-oblongis erectis obtusis sinubus latis sejunctis tubo fere duplo brevioribus; corolla extus sparse stellato-tomentella vel fere glabra, calycis tubo lobis vix longiore, limbo ca. 3 mm. lato, lobis brevibus late ovalibus vel subrotundatis apice late rotundatis intus glabris.—Mexico: Mount Ovando, Chiapas, December, 1936, *E. Matuda* S-085 (type in Herb. Field Mus.). Mount Pasitar, Chiapas, December 30, 1936, *Matuda* S-36.

GENTIANACEAE

In 1932 the writer described (Rhodora 34: 176) a form of *Eustoma Russellianum* having pure white corollas as *E. Russellianum* f. *Fisheri*, named for the collector, Mr. George L. Fisher. Later in the same year Mr. Fisher made further collections to show the color variations in this showy plant, but the material has lain in the herbarium without further study until the present time. Two

other color variants seem worthy of nomenclatural recognition, and may be named as follows:

Eustoma Russellianum (Hook.) Griseb. f. **bicolor** Standl., f. nov.—Corolla alba, lobis basi purpureo tinctis.—Texas: Willis, July 4, 1932, *C. L. Brock* 32114 (type in Herb. Field Mus.).

Mr. Fisher states that this is an easily recognizable form, about as plentiful as the following one. The three grow together on the farm of Mr. L. D. Cluxton near Willis, in such abundance that he sells large quantities of the flowers each year to florists, especially of the albino form, f. *Fisheri*. In forma *bicolor* the corolla is white except for some purple coloring at the base of the lobes.

Eustoma Russellianum f. **roseum** Standl., f. nov.—Corolla rosea, lobis basi sordide rubris.—Texas: Willis, July 5, 1932, *George L. Fisher* 32116 (type in Herb. Field Mus.).

In this form the corolla is pink or rose-pink, the lobes dark brick-red at the base. The collector states that it is locally plentiful with the type.

EBENACEAE

Diospyros Delgadoi Standl., sp. nov.—Arbor ut videtur dense ramosa, ramulis patentibus nodosis dense puberulis, internodiis brevibus; folia inter minora brevissime petiolata coriacea, petiolo crassiusculo ca. 4 mm. longo; lamina ovalis vel oblongo-elliptica 3–7.5 cm. longa 2–3.5 cm. lata obtusa vel saepe rotundata, basi obtusa, supra in sicco cinerea glabrata, tantum ad nervos sparse minute puberula, costa nervisque prominulis, subtus brunnescens laxe pilis flaccidis intertextis tomentosa, costa gracili prominente, nervis lateralibus utroque latere 3–5 arcuatis teneris prominentibus angulo latiusculo adscendentibus, venis obscuris; calyx in statu fructifero patens ad medium trilobus utrinque sat dense piloso-tomentosus 1.5–2 cm. latus, lobis latissimis acutis vel subacutis; fructus globosus 1.5–2 cm. diam. in maturitate glaber et ad apicem breviter mammillatus sericeus; semina ca. 5 plerumque 1 cm. longa atque 5 mm. lata.—Venezuela: Boundary between Lara and Trujillo, Trentina, November, 1937, *Estéban Delgado* 96 (type in Herb. Field Mus.).

The species is referable to the genus *Maba*, as treated by Hiern and other authors, but *Maba* seems better referable to *Diospyros*, where it has been placed by various recent writers.

Diospyros Mexiae Standl., sp. nov.—Arbor 5-metralis gracilis, ramulis crassiusculis in sicco olivaceis substriatis glabratis, inter-

nodiis brevibus; folia modica breviter petiolata coriacea in sicco olivacea, petiolo crassiusculo 1–1.5 cm. longo; lamina oblongo-lanceolata vel anguste elliptico-oblonga 9–14 cm. longa 3–5 cm. lata acuta vel acuminata, basi acuta, supra lucida glabra vel tantum ad costam sparse puberula, costa impressa, nervis subplanis, subtus ut videtur primo brunneo-tomentella sed cito glabrata, costa gracili elevata, nervis lateralibus utroque latere ca. 10 tenerrimis aliquanto irregularibus prominulis angulo latiusculo adscendentibus rectis vel arcuatis obliquis; flores axillares, pedicellis fructiferis incrassatis vix ultra 3 mm. longis; calyx 3-(vel 4- ?)lobus 2.5 cm. latus vel ultra, profunde lobatus, extus brunneo-tomentellus vel serius glabratus, intus dense sericeus, lobis late deltoideo-ovatis acutis vel acuminatis patentibus; fructus subglobosus vel paullo altior quam latus 2 cm. longus vel ultra apice late rotundatus et mammillatus, ut videtur primo sat dense brunneo-sericeus sed cito glabratus.—Brazil: About 5 km. north of Fazenda da Gramma, on westward face of mountain slope, matta virgem, forming part of understory in dense shade, Districto Carangola, State of Minas Geraes, alt. 920 meters, February 4, 1930, *Ynes Mexia* 4316 (type in Herb. Field Mus.).

CONVOLVULACEAE

Ipomoea Davidsoniae Standl., sp. nov.—Volubilis herbacea, caule gracili dense pilis longiusculis pallidis patentibus piloso, internodiis elongatis; folia modica longissime petiolata membranacea, petiolo gracillimo 5–10 cm. longo dense breviter piloso; lamina late deltoideo-ovato-cordata 5–7.5 cm. longa 3.5–7 cm. lata acuminata vel cuspidato-acuminata, basi profunde lateque cordata, lobis posticis late rotundatis, integra vel subundulata, utrinque dense pilis longiusculis mollibus patentibus pallidis pilosa; inflorescentia perfecta non visa, floribus delapsis ca. 3 mm. longe pedicellatis; sepala subcoriacea subaequalia adpressa ovalia vel elliptica ca. 12 mm. longa apice late obtusa et minute mucronata dense pilis longis pallidis patentibus pilosa; corolla pallide purpurea ca. 4 cm. longa glabra.—Panama: Bajo Mono, Boquete District, Province of Chiriquí, alt. 1,350 meters, April 3, 1938, *Mrs. M. E. Davidson* 595 (type in Herb. Field Mus.).

The available material is not well preserved, but an apparently distinct and undescribed species is represented, noteworthy locally for the abundant pubescence of the foliage, and especially for the densely long-pilose sepals.

Ipomoea quesadana Standl., sp. nov.—Herba volubilis omnino glabra, caule gracillimo, internodiis plerumque elongatis; folia inter minora longipetiolata membranacea, petiolo gracillimo 2.5–6 cm. longo; lamina ambitu late triangulari-ovata plerumque 4–6 cm. longa et 3–6 cm. lata, typice breviter vel subprofunde triloba, lobo medio triangulari vel ovato acuminato, lobis lateralibus medio multo brevioribus, interdum valde reductis vel nullis, lamina basi leviter lateque cordata; lamina foliorum superiorum saepe vulgo reducta et 1–3 cm. tantum longa, rotundo-ovata et interdum apice rotundata, breviter petiolata; flores parvi, pedunculis axillaribus crassiusculis 5–18 mm. longis 1–3-floris interdum granulosis, pedicellis crassis usque 5 mm. longis; sepala subaequalia, exterioribus interdum paullo brevioribus, subcoriacea glabra, apice rotundata vel subtruncata et saepe brevissime mucronata; corolla rosea glabra ca. 2 cm. longa.—Costa Rica: Villa Quesada, Cantón de San Carlos, Prov. Alajuela, alt. 850 meters, February 21, 1939, *Austin Smith* H1609 (type in Herb. Field Mus.).

"Growing in rain forest, Caribbean watershed; small morning-glories, rather fragile, the corolla deep begonia rose in the throat, light pink on the limb, 2.5 cm. long and 2 cm. wide, open at midday."

VERBENACEAE

Clerodendron Moldenkeanum Standl., sp. nov.—Frutex vel arbor ut videtur inermis, ramis crassiusculis fusco-ochraceis, internodiis elongatis, ramulis glabris vel ad nodos sparse pilosis, cicatricibus foliorum delapsorum plus minusve incrassatis; folia bene evoluta non visa, juvenilia in sicco fusca modica breviter petiolata, petiolo crassiusculo ad 7 mm. longo glabro vel sparse piloso; lamina ovata vel lanceolato-ovata 4.5–6 cm. longa 1.5–2.5 cm. lata acuminata, basi acuta vel obtusa, utrinque puncticulata, supra glabra, costa nervisque subimpressis, subtus ad costam nervosque sparse breviter setuloso-pilosa, cito glabrata, costa gracili elevata, nervis lateralibus utroque latere ca. 5 angulo semirecto adscendentibus arcuatis prominentibus; flores in cymulas paucifloras axillares sessiles aggregati, pedicellis gracilibus 1.5–2 cm. longis glabris; calyx glaber, tubo campanulato basi acuto 4 mm. longo, lobis lineari-subulatis paullo inaequalibus 5–6 mm. longis erectis glabris; corolla in alabastro 12 mm. longa obtusa extus glabra, tubo limbo fere duplo longiore fauce 2 mm. lato.—Mexico: Volcán de Tacaná, Chiapas, alt. 1,400 meters, March, 1939, *E. Matuda* 2760 (type in Herb. Field Mus.).

This species, evidently distinct from the few known previously from Mexico and Central America, is named for Dr. Harold N. Moldenke, monographer of this and other genera of the Verbenaceae.

SOLANACEAE

Lycianthes amphidoxys Standl., sp. nov.—Frutex scandens, trunco 2 cm. crasso, caulibus usque 5 m. longis ramosis glabris, internodiis brevibus vel aliquanto elongatis; folia inter minora breviter petiolata crasse membranacea, paris valde inaequalia, petiolo 3–8 mm. longo sparse pilosulo vel fere glabro; lamina foliorum majorum lanceolato-oblonga 5–10 cm. longa 1.5–3.5 cm. lata longissime attenuato-acuminata, basi plus minusve inaequali acuta, supra in sicco olivacea sparse breviter scabro-pilosa, subtus fere concolor ad costam nervosque incurvo-puberula vel fere glabra, costa gracili elevata, nervis lateralibus utroque latere ca. 6 teneris arcuatis prominentibus angulo semirecto vel latiore adscendentibus; lamina foliorum minorum rotundato-ovata 1.5–3 cm. longa obtusa vel rotundata, basi rotundata; flores axillares solitarii vel saepius paucifasciculati, pedicellis gracillimis 1.5–2.5 cm. longis glabris; calyx glaber latissime campanulatus ca. 4 mm. altus atque 5 mm. latus truncatus, paullo infra marginem appendicibus 5 viridibus incrassatis obtusis erectis ca. 2 mm. longis onustus; corolla lutea ca. 8 mm. longa extus glabra; bacca globosa 8 mm. diam.—Ecuador: Western Cordillera, forest region above Balsapampa, east of Babahoyo, alt. 2,600 meters, July, *A. Rimbach* 840 (Yale School For. 34191; type in Herb. Field Mus.).

"Flowers 1.5 cm. long, yellow; berry at first whitish, finally red. Wood white. Bark 1 mm. thick, brownish gray, smooth but somewhat fissured, with elongate lenticels."

Lycianthes chiriquensis Standl., sp. nov.—Arbor ut dicitur 9–12-metralis, fere glabra, ramis crassiusculis ochraceis rimosis, internodiis brevibus glabris; folia subaequalia petiolata membranacea, petiolis gracilibus glabris 1–2 cm. longis; lamina inaequilateralis oblongo-elliptica vel oblongo-ovata, rarius late ovata, 5.5–12 cm. longa 2.5–5.5 cm. lata subabrupte acuminata vel longe attenuato-acuminata, basi solemniter inaequali acuta vel obtusa, supra in sicco glabra olivacea, subtus concolor, in axillis nervorum dense stellato-pilosa, aliter glabra, nervis lateralibus utroque latere ca. 5 arcuatis angulo latiusculo adscendentibus; flores axillares plerumque paucifasciculati, pedicellis fere filiformibus vulgo 10–14 mm. longis, interdum brevioribus, glabris; calyx campanulatus truncatus basi obtusus 3.5 mm. longus et aequilatus; corolla pallide purpurea extus glabra 8 mm. longa ad basin lobata, segmentis late patentibus lineari-oblongis acutiusculis intus glabris; antherae fere 6 mm. longae obtusae.—Panama: In forest, Boquete, Prov. Chiriquí, alt. 1,140 meters, May 12, 1938, *Mrs. M. E. Davidson* 623 (type in Herb. Field Mus.).

The flowers are described as lavender. The size indicated by the collector is extraordinary for this genus and family, and may be erroneous.

Lycianthes luisana Standl., sp. nov.—Herba 30 cm. alta et ultra ut videtur sparse ramosa, caule crassiusculo villosulo vel incurvo-pilosulo, internodiis plerumque elongatis; folia majuscula petiolata membranacea, paris insigniter inaequalia, petiolo gracili usque 4 cm. longo sed vulgo multo breviore; lamina foliorum majorum elliptica vel late ovata 10–22 cm. longa 4–9.5 cm. lata breviter vel longe acuminata, basi plus minusve abrupte et saepe inaequaliter acuta vel late cuneata, supra in sicco viridis pallido-puncticulata glabra, subtus concolor puncticulata ad costam nervosque sparse incurvo-puberula vel fere omnino glabra, nervis lateralibus utroque latere ca. 6 arcuatis teneris angulo latiusculo adscendentibus; flores axillares solitarii, pedicellis gracilibus 1.2–3 cm. longis glabris; calyx glaber turbinato-campanulatus ca. 4 mm. longus et 5 mm. latus truncatus paullo infra marginem appendicibus 10 viridibus plus minusve incrassatis 3–4 mm. longis onustus; corolla rotata fere 1 cm. longa glabra patens ut videtur viridescens; antherae 6 mm. longae obtusae.—Mexico: Tamazunchale, San Luis Potosí, July, 1937, *Mary Taylor Edwards* 913 (type in Herb. Field Mus.), 520, 535, 496.

The berries are said to be bright red when ripe. The collector reports the following rather numerous local names for the plant: Chilequaqua, Flor de mariposa, Tomatillo, Arrete de la Virgen. Such a large number of distinct names from a single locality leads one to suspect that they were manufactured for the occasion by the informant or informants.

Lycianthes obliquifolia Standl., sp. nov.—Frutex ut videtur scandens ramosus, ramis subgeniculatis crassiusculis brunneo-ochraceis sparse breviter villosis, internodiis brevibus, nodis plus minusve incrassatis; folia inter minora breviter petiolata omnia subaequalia membranacea, petiolo 5–9 mm. longo sparse patenti-villoso; lamina lanceolato-ovata 5.5–10 cm. longa 2–3.5 cm. lata solemniter inaequilatera longe angusteque acuminata, basi oblique acuta usque subrotundata, supra in sicco olivacea sparse breviter villosula, subtus concolor sparse breviter villosa, nervis lateralibus utroque latere ca. 4–5 subarcuatis angulo semirecto adscendentibus obliquis; flores axillares solitarii, pedicellis saltem fructiferis gracilibus rectis 4–5 cm. longis sparse villosis sub calycem paullo incrassatis; calyx latissime campanulatus ca. 4 mm. altus atque 5–6 mm. latus truncatus sparse subadpresse villosulus, paullo infra marginem appendicibus 10 viridibus incrassatis erectis 3–4 mm. longis onustus; bacca subglobosa ca. 6 mm. lata.—Mexico: Volcán de Tacaná, western slope, alt. 2,800 meters, March 30, 1939, *E. Matuda* 2938 (type in Herb. Field Mus.).

Physalis sonorensis Standl., sp. nov.—Herba multiramosa ut videtur fragilis, ramis dichotomis breviter dense viscido-pilosis, internodiis foliis brevioribus subteretibus interdum tantum puberulis; folia parva longissime petiolata herbacea, petiolo gracillimo vulgo 1.5–2.5 cm. longo breviter viscido-piloso; lamina late ovata, elliptico-ovata vel rotundato-ovata 1.3–2.5 cm. longa 1–2 cm. lata obtusa vel subacuta, basi late rotundata vel obtusa, interdum late cuneata vel abrupte breviterque contracta, grosse sinuato-dentata vel undulato-dentata, basin versus integra, utrinque sparse vel subdense breviter viscido-villosula; pedicelli solitarii gracillimi ad anthesin erecti ca. 2 cm. longi dense viscido-villosuli; calyx ad anthesin campanulatus 5–6 mm. longus medio 3.5 mm. latus subdense breviter viscido-villosulus, dentibus erectis oblongo-ovatis tubo paullo brevioribus acutis; corolla pallide lutea 1 cm. longa extus sparse viscido-villosula, limbo breviter lobato, lobis latissimis obtusis.—Mexico: Bachoco, 12 miles east of Cajeme, Sonora, in rocks on malpais hill, Lower Sonoran Zone, in thorn forest, February 20, 1937, *Howard Scott Gentry* 3011 (type in Herb. Field Mus.).

The species is remarkable for the greatly elongate pedicels and petioles.

Solandra brevicalyx Standl., sp. nov.—Ramuli crassi ochracei rugosi; folia modica petiolata papyracea, petiolo 1.5–2.5 cm. longo sparse laxeque stellato-tomentoso; lamina obovata vel elliptico-obovata 6–9.5 cm. longa 3.5–5.5 cm. lata, apice obtusa vel rotundata et acuminato-apiculata, basi inaequali acuta, supra sparse pilis laxis parvis ramosis conspersa, subtus densiuscule stellato-tomentosa, nervis lateralibus utroque latere ca. 6 angulo lato adscendentibus teneris subarcuatis prominulis; flores crasse ca. 7 mm. longe pedicellati magni; calyx ca. 3 cm. longus et 1 cm. latus, sparse laxeque stellato-villosus, lobis lanceolatis vel ovatis acutis vel acuminatis tubo duplo brevioribus; corolla glabra 10–17 cm. longa, limbo 6 cm. lato vel ultra, tubo inferne gracillimo supra calycem 3 mm. lato, sursum sensim dilatato.—Mexico: Region of Jaumave, Tamaulipas, in 1932, *H. W. von Rozynski* 394 (type in Herb. Field Mus.).

Solandra brevicalyx is probably the northernmost member of this small genus. From other related species it is well distinguished by the short calyx.

Solanum boquetense Standl., sp. nov.—Herba vel frutex metralis, ramis crassis dense aculeatis, densissime pilis magnis laxis fulvis inaequalibus longissime stipitatis stellatis indutis, aculeis rectis patentibus gracilibus plus minusve compressis usque 5 mm. longis fusco-ochraceis; folia inaequalia magna petiolata herbacea, petiolo crasso foliorum majorum usque 9 cm. longo aculeato et dense pilis stipitatis tomentoso; lamina late ovali-ovata vel late elliptica usque 26 cm. longa atque 20 cm. lata vel multo minor, apice obtusa vel subacuta, basi lata breviter cordata usque subacuta, brevissime angulato-lobata vel subintegra et tantum undulata, utrinque ad costam nervosque aculeis paucis crassis remotis armata, supra densissime pilis fulvidis sat longis sessilibus vel breviter stipitatis intertextis induta, radio centrali pili aliis multo longiore, subtus pallidior densissime molliter pilis stellatis plerumque stipitatis tomentosa; flores dense in racemos breves multifloros aggregati breviter crasse pedicellati extus in omnibus partibus pilis magnis fulvis longistipitatis sat mollibus stellatim ramosis dense obtecti; calyx 7–8 mm. longus, tubo late campanulato basi obtuso, lobis erectis tubo aequilongis obtusis; corolla alba 1 cm. longa vel ultra fere ad basin lobata, segmentis lanceolato-oblongis acuminato-apiculatis intus glabris; fructus immaturus globosus densissime pilis longissimis plurilocularibus hispidus.—Panama: Boquete, Prov. Chiriquí, alt. 1,140 meters, June 28, 1938, *Mrs. M. E. Davidson* 817 (type in Herb. Field Mus.).

The plant is perhaps a relative of *S. hirtum* Vahl, one of the common, weedy species of Central America.

Solanum Davidsoniae Standl., sp. nov.—Frutex inermis 3–4.5 m. altus ubique glaber, ut videtur sat ramosus, ramis nodosis sordide ochraceis, internodiis brevibus; folia inter minora breviter petiolata membranacea paris inaequalia, petiolo crassiusculo 5–9 mm. longo; lamina in foliis majoribus oblique ovata vel oblongo-ovata 4.5–8 cm. longa 2–4 cm. lata acuta vel subito acuminata, basi inaequali acuta vel abrupte contracta, integra, supra in sicco viridis, subtus paullo pallidior; lamina foliorum minorum paris rotundato-ovata vel rotundo-elliptica 1–3 cm. longa et saepe fere aequilata, apice obtusa vel rotundata, basi obtusa vel rotundata; flores ut videtur solitarii axillares, pedicellis 1.5 cm. longis gracilibus sursum paullo incrassatis; calyx 4 mm. longus et aequilatus basi obtusus, margine breviter obtuse dentato; corolla pallide lutea 12 mm. longa profunde lobata, lobis elliptico-ovatis obtusis.—Panama: In rain forest, Bajo Chorro, Boquete District, Prov. Chiriquí, alt. 2,100 meters, March 2,1938, *Mrs. M. E. Davidson* 362 (type in Herb. Field Mus.).

Solanum pluviale Standl., sp. nov.—Frutex 2–4.5 m. altus aculeatus, ramis crassis fere glabris sed pilis paucis parvis remotis sessilibus et stipitatis stellatis conspersis, internodiis elongatis, aculeis paucis patentibus usque 8 mm. longis compressis basi valde dilatatis fusco-brunneis; folia magna petiolata herbacea subaequalia, petiolo usque 7.5 cm. longo aculeis paucis magnis armato sparse pilis breviter stipitatis parvis rigidis consperso; lamina 16–28 cm. longa et 15–25 cm. lata ad medium vel brevius pinnato-lobata utrinque ad costam nervosque aculeis paucis patentibus rectis magnis armata, supra aspera sat dense pilis minutis rigidis pauciramosis fulvidis sessilibus conspersa, subtus fere concolor similiter sed densius induta, lobis laminae lanceolato-oblongis vel interdum deltoideis acutis vel acuminatis patentibus vel obliquis; flores in cymas multifloras densas pedunculatas dispositi pedicellati, pedicellis dense rigide pilis brevibus fulvidis eglandulosis indutis; calyx dense stellato-hispidulus, tubo late campanulato ca. 3 mm. longo et paullo latiore 5-lobato, lobis remotis sinubus late rotundatis segregatis oblongo-linearibus erectis tubo aequilongis; corolla alba ca. 1 cm. longa extus densissime pilis parvis rigidis stellatis sessilibus conspersa, fere ad basin 5-lobata, segmentis lanceolato-oblongis acutiusculis intus glabris; antherae angustae ca. 6.5 mm. longae sursum sensim attenuatae.—Panama: In rain forest, Bajo Chorro, Boquete District, Prov. Chiriquí, alt. 1,800 meters, January 24, 1938, *Mrs. M. E. Davidson* 189 (type in Herb. Field Mus.).

Noteworthy for the stout, glabrate branches, and for the large, deeply pinnatifid, green, very rough leaves.

Solanum salsum Standl., sp. nov.—Frutex aculeatus ca. metralis, ut videtur dense ramosus, ramis crassiusculis teretibus densissime pilis stellatis sessilibus vel breviter stipitatis brunnescentibus indutis, internodiis brevibus, aculeis sat numerosis vel interdum paucis rectis patentibus lateraliter subcompressis 5–6 mm. longis basi valde dilatatis; folia inter minora petiolata herbacea, petiolo 6–17 mm. longo dense stellato-tomentoso; lamina ovata, oblongo-ovata vel oblongo-ovalis vulgo 3.5–7 cm. longa et 2–4 cm. lata apice obtusa vel rotundata, basi rotundata vel late obtusa et vulgo inaequalis, uno latere breviore, integra vel subundulata, supra dense pilis stellatis sessilibus rigidis conspersa, costa venisque impressis, subtus paullo pallidior brunneo-ochracea densissime pilis intertextis sessilibus stellatis tomentosa, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 6 angulo semirecto adscendentibus; inflorescentiae umbelliformes vel breviter racemosae plerumque 2–7-florae vix ultra 6 mm. longe pedunculatae, pedicellis gracilibus vulgo 1–2.5 cm. longis pilis stipitatis stellatis dense indutis; calyx ca. 6 mm. longus extus dense stellato-tomentosus, pilis sessilibus vel substipitatis, fere ad basin lobatus, segmentis lanceolato-oblongis acutiusculis in statu fructifero paullo accrescentibus et usque 9 mm. longis; corolla alba ca. 8 mm. longa extus dense stellato-tomentosa stellatim patens, segmentis fere lineari-lanceolatis attenuato-acutis; antherae fere 5 mm. longae sursum paullo attenuatae; bacca globosa glabra apice rotundata 8–9 mm. diam.—Mexico: Salina Cruz, Oaxaca, on rocky slope above the seashore, June, 1937, *Llewelyn Williams* 9706 (type in Herb. Field Mus.); edge of road in low forest, *Williams* 9686; side of road, in sandy soil near the seashore, *Williams* 9703.

SCROPHULARIACEAE

Buchnera leiantha Standl., sp. nov.—Herba simplex erecta stricta 25–30 cm. alta, caule gracili sed rigido bifariam incurvopuberulo, internodiis foliis duplo brevioribus; folia numerosa anguste linearia vel fere subulata erecta vel adpressa sessilia plerumque 1.5–3 cm. longa ad margines arcte revolutos scabrella obtusa 1-nervia; flores spicati, spicis dense paucifloris 2.5–4 cm. longis, bracteis lanceolatis cymbiformibus acuminatis ciliatis dimidium calycis aequantibus arcte adpressis; calyx glaber 8 mm. longus subtubulosus sursum paullo dilatatus, dentibus anguste triangularibus subulato-acuminatis erectis 1.5 mm. longis; corolla ut dicitur alba vel purpurascens ca. 1 cm. longa extus glabra, lobis rotundato-ellipticis 3 mm. longis.—Panama: Boquete, Prov. Chiriquí, alt. 1,350 meters, an herb 10–25 cm. high, January 11, 1939, *Mrs. M. E. Terry* 1273 (type in Herb. Field Mus.).

From other *Buchnera* material that I have seen from Central America, this is readily separable by the glabrous flowers.

Castilleja bella Standl., sp. nov.—Herba nana perennis dense caespitosa 6–10 cm. alta, caulibus abbreviatis simplicibus saepe fere nullis foliis basalibus occultis, sparse laxeque longipilosis vel villosis; folia radicalia numerosissima 3–6.5 cm. longa basi 4–7 mm. lata linearia longissime attenuata, saepissime falcata et incurva vel subtorta, sparse laxe pilosa vel fere glabra ca. 6-nervia; racemi laxe pauciflori, rhachi laxe albido-villosa; bracteae ca. 2 cm. longae supra basin purpureo-rubrae, plerumque fere ad medium trilobae, lobo medio oblongo obtusissimo, interdum utroque latere breviter lobulato, lobis lateralibus fere aequilongis linearibus obtusis, extus praesertim ad nervos longivillosae vel puberulae; calyx fere 2.5 cm. longus vix apice 4 mm. latus dense albo-villosus bilobus, lobis 5 mm. longis obtusissimis purpureo-rubris dense minute puberulis; corolla calyce paullo longior 2.5 cm. longa vel ultra, tubo hyalino glabro, galea 1 cm. longa recta viridi superne dorso dense breviter pilosula rubro-marginata, labio inferiore viridi vix 1.5 mm. longo.—Mexico: State of Nuevo León, abundant in meadows above and below timber line, peak of Cerro Potosí, Municipio de Galeana, July 21, 1935, *C. H. Mueller* 2249 (type in Herb. Field Mus.). Abundant on rocky alpine meadows of peak of Cerro Potosí, alt. 3,750 meters, July 18, 1938, *Richard A. Schneider* 935.

Mr. Schneider has supplied the following notes: "Bracts brilliant red. A very conspicuous plant, abundant on the treeless peak, and extending down (equally abundant) into the pine forest and in grassy openings for over 300 meters. In exposed places only 2.5–5 cm. high. In the shelter of the timber at times reaching a height of 12 cm., but even in such places most of the plants are low. One yellow-flowered individual was collected." Probably a local, alpine species, noteworthy for its low, dense habit, the stems bearing flowers almost or quite to their bases, which are hidden by the very numerous long, twisted and curled basal leaves.

GESNERIACEAE

Columnea Muenscheri Standl., sp. nov.—Frutex epiphyticus, ramo unico viso ca. 30 cm. longo crasso cortice ferrugineo obtecto, internodiis brevibus 1–1.5 cm. tantum longis; folia subdensa breviter petiolata subcoriacea, petiolo crassiusculo 3–5 mm. longo; lamina lanceolato-linearis 5.5–7.5 cm. longa 5–8 mm. lata longe attenuato-acuminata, basin versus sensim attenuata, 1-nervia, supra in sicco cinereo-viridis glabra, costa impressa, subtus subsparse pilis longis laxis sericea, costa gracili elevata rubescente; flores axillares solitarii, bracteis lanceolato-ovatis 6–8 mm. longis acuminatis laxe sericeis, pedicello ca. 1 cm. longo laxe adpresso-piloso; calyx 2 cm. longus extus subsparse laxe adpresso-pilosus fere ad basin lobatus, lobis lineari-lanceolatis longissime attenuatis intus ad costam breviter pilosis; corolla laete rubra 6.5 cm. longa extus pilis longis patentibus multilocularibus rubris villosa, tubo 3.5 cm. longo ad orem 1 cm. lato, limbo insigniter bilabiato, lobo postico fere 3 cm. longo atque expanso 2 cm. lato apice subtruncato, labio inferiore profunde trilobo, lobis e basi lata ovato-deltoideo-acuminatis.—Guatemala: On pine ridge, Finca Moca, Dept. Suchitepéquez, alt. 990 meters, May 4, 1937, *W. C. Muenscher* 12449 (type in Herb. Field Mus.).

Evidently a handsome and showy plant, marked by the very large corollas and long, narrow leaves.

Kohleria filisepala Standl., sp. nov.—Herba ut videtur erecta, caule subgracili dense brunnescenti-villoso, internodiis superioribus brevibus; folia modica petiolata herbacea, petiolo gracili 2.5–5.5 cm. longo dense villoso; lamina elliptico-lanceolata vel lanceolato-oblonga 10–14 cm. longa 3–5.5 cm. lata anguste longiacuminata, basi acuta, utrinque sat dense, subtus paullo densius, pilis longis multilocularibus villosa, nervis lateralibus obliquis angulo semirecto vel angustiore adscendentibus fere rectis utroque latere ca. 8; inflorescentiae axillares cymose ca. 5-florae graciliter 3–7 cm. longe pedunculatae folia interdum fere aequantes, pedicellis brevibus vix ad 3 mm. longis; calycis tubus anguste turbinatus ca. 3 mm. longus basi attenuatus, lobis liberis deciduis anguste linearibus et fere filiformibus inaequalibus 12–24 mm. longis dense villosis; corolla extus sparse villosa, tubo ca. 4 cm. longo e basi ad faucem ca. 7 mm. latum sensim dilatato, lobis ovato-triangularibus patentibus acutis 7–8 mm. longis intus puberulis; discus lobatus glaber, stylo filiformi 4.5 cm. longo; antherae lineares 8 mm. longae.—Mexico: Mount Ovando, Chiapas, December 16, 1936, *E. Matuda* 574 (type in Herb. Field Mus.).

A remarkable plant, especially noteworthy because of the exceedingly narrow and greatly elongate calyx lobes.

RUBIACEAE

Alibertia dolichophylla Standl., sp. nov.—Arbuscula, ramulis crassiusculis nodosis ochraceis rimosis sparse puberulis vel glabratis, internodiis abbreviatis; stipulae 1 cm. longae obtusae; folia majuscula petiolata pergamentacea, petiolo ca. 2 cm. longo; lamina anguste oblanceolato-oblonga ca. 21 cm. longa et 5–6 cm. lata acuminata, basin angustam versus sensim longiattenuata, glabra vel glabrata, in sicco fusca, supra sublucida, costa gracillima subtus prominente,

nervis lateralibus utroque latere ca. 9 obliquis angulo latiusculo adscendentibus teneris; inflorescentia mascula terminalis 1 cm. longe pedunculata 7-flora cymosa et capituliformis, pedicellis brevissimis vel nullis crassis minute subadpresso-pilosulis; hypanthium cum calyce campanulatum 6 mm. longum 4 mm. latum basi obtusum minute adpresso-pilosulum, calycis dentibus triangularibus obtusis 1 mm. longis erectis; corolla alba in alabastro 1.5 cm. longa, tubo 3.5 mm. lato dense retrorso-sericeo, lobis tubo aequilongis angustis obtusis breviter denseque antrorso-sericeis.—Brazil: Juruty Velho, civ. Pará, silva terris altis argillosis ad meridiem lacus, July 29, 1927, *A. Ducke* 22916 (type in Herb. Field Mus.).

Among the somewhat numerous Brazilian species of *Alibertia*, the present Amazonian one is noteworthy for its relatively narrow and elongate leaves.

Blepharidium mexicanum Standl., sp. nov.—Arbor 5–6-metralis fere glabra, ramulis crassis saltem in sicco complanatis et fuscis glabris, internodiis 4–6 cm. longis; stipulae ferrugineae tenues lanceolato-triangulares 2.5 cm. longae et basi 12 mm. latae subulato-attenuatae glabrae; folia magna petiolata membranacea, petiolo 2.5–3.5 cm. longo supra sparse piloso; lamina elliptica 19–26 cm. longa 9–14 cm. lata acuta vel breviter obtuseque acuminata, basi obtusa vel rotundata, supra ad costam nervosque sparse pilosa, aliter glabra, subtus paullo pallidior in axillis nervorum albo-barbata, sparsissime fere ubique breviter pilosa vel glabrata, costa crassiuscula elevata, nervis lateralibus utroque latere ca. 13 angulo lato adscendentibus arcuatis pallidis teneris prominentibus, venis laxe reticulatis; inflorescentiae axillares solitariae 9–17 cm. longe pedunculatae, simplices et flores 3 vel plures umbellatos gerentes vel breviter cymosae vel subracemosae, foliaceo-bracteatae, bracteis superioribus plerumque elliptico-oblongis et 5–6 mm. longis, inferioribus multo majoribus, pedicellis interdum usque 2 cm. longis, flore centrali cymulae sessili; hypanthium obovoideum glabrum 4 mm. longum basi acutatum; calyx 4 mm. longus et 7 mm. latus glaber, lobis brevibus latissimis convolutis apice late rotundatis ciliolatis; corolla alba glabra, tubo ca. 4 cm. longo ad faucem 5 mm. lato sursum vix dilatato, lobis ovalibus apice rotundatis ca. 1 cm. longis patentibus.—In advanced forest, "Rvina," Palenque, Chiapas, July, 1939, *E. Matuda* 3670 (type in Herb. Field Mus.).

The genus *Blepharidium*, with a single species, *B. guatemalense*, was published by the writer in 1918 (Journ. Wash. Acad. 8: 59), being based upon a single collection made by H. Pittier along the Saklak River below Secanquím, Alta Verapaz, Guatemala. Further material of the same plant, a shrub 2.5–5.5 meters high, was collected by the writer in 1922 on the hills above Quiriguá, Dept. Izabal, Guatemala, and the following recent collections also are in the Herbarium of Field Museum: Near Quiriguá, alt. about 150 m., April, 1939, *Standley* 72473, 72273, 72275, 72472. In the original description the fruit was not described, and no perfect fruit is now available. It is, however, a septicidal and partially loculicidal capsule 1.5–2 cm. long, obtuse, acutish at the base, hard and somewhat woody. The shrub is fairly common on the hot and rather dry hills overlooking Quiriguá, growing among other scrubby vegetation, such as *Curatella*, *Byrsonima*, etc.

It was a surprise to receive material of evidently the same genus from the State of Chiapas. At first it was assumed that it belonged to the species described from the north coast of Guatemala, but closer study shows differences that force one to believe that two species are represented. As compared with the Chiapas plant, the Guatemalan one has much larger flowers, the corolla tube being 6 cm. long. Moreover, in *B. guatemalense* the only leaf pubescence consists of tufts of hairs in the axils of the primary nerves, while in *B. mexicanum* these hair tufts are present and there are also sparse hairs scattered here and there over all the lower leaf surface.

Borreria Bradei Standl. Field Mus. Bot. 11: 184. 1936.—When described, this species was based upon a single collection, *Brade* 9953 from Therezopolis, Pedra Chapadão, State of Rio de Janeiro, Brazil. The following collections have been received more recently: Sta. Magdalena, Alto do Desengano, alt. 2,000 meters, March, 1934, *Santos Lima & Brade* 13354 (Herb. Inst. Biol. Veg. 24607). Serra dos Orgãos, alt. 2,000 meters, May, 1931, *A. C. Brade* 10800 (Herb. Mus. Nac. Rio 24308). Sta. M. Magdalena, Serra da Furquilha, Rio de Janeiro, alt. 1,700 meters, March, 1935, *Santos Lima & Brade* 27682.

Borreria evenia Standl., sp. nov.—Herba ut videtur perennis erecta(?) ramosa, caulibus crassiusculis fusco-ferrugineis glabris nodosis 9 cm. longis, internodiis abbreviatis; stipularum setae incrassatae et herbaceae 2–4 mm. longae; folia parva crasse herbacea subsessilia anguste lanceolato-oblonga 1.5–2.3 cm. longa 3–7 mm. lata apicem obtusum vel acutiusculum versus angustata, basi subacuta vel obtusa et contracta, glabra, costa supra anguste impressa, subtus prominula, nervis venisque obsoletis, subtus minute fusco-puncticulata; flores parvi dense capitati, capitulis terminalibus

sessilibus ca. 8 mm. latis basi bracteis paucis foliis conformibus fulcratis; hypanthium glabrum oblongum; sepala 2 erecta triangulari-oblonga ca. 0.8 mm. longa subobtusa; corolla glabra 1.5 mm. longa vel paullo ultra, lobis oblongo-ovatis obtusis tubo brevi multo longioribus; stamina breviter exserta; fructus cocci glabri angusti 1.8 mm. longi.—Trinidad Island (a possession of Brazil), *B. Lobos* 4875 (type in Herb. Field Mus., received from the Museu Nacional of Rio de Janeiro).

Borreria nana Standl., sp. nov.—Herba ut videtur perennis erecta(?) sparse ramosa, caulibus crassiusculis angulatis glabris 10–12 cm. longis, internodiis foliis longioribus vel brevioribus; stipularum setae suberectae rigidae viridescentes usque 4 mm. longae; folia sessilia vel breviter petiolata rigide herbacea oblonga, oblongo-lanceolata vel ovato-oblonga 2–3 cm. longa 7–12 mm. lata in sicco laete lutescentia, acuta vel obtusa, basi cuneato-acuta vel subobtusa, utrinque glabra, costa venisque supra anguste impressis, costa subtus prominente crassa, nervis lateralibus utroque latere ca. 3 prominentibus angulo angusto adscendentibus; flores glabri dense capitati, capitulis terminalibus et axillaribus sessilibus densissime multifloris 1 cm. latis vel paullo ultra, basi bracteis 2 vel pluribus foliis conformibus fulcratis; hypanthium turbinatum paullo ultra 1 mm. longum; sepala 4 triangulari-oblonga 3–4 mm. longa subaequalia viridescentia acuta vel subacuta; corolla ca. 5 mm. longa caerulea vel purpurea, tubo superne late dilatato, lobis patulis triangulari-ovatis intus villosis; stamina exserta; fructus cocci 3 mm. longi septicide dehiscentes; semina nigra 2.5 mm. longa minute transverse rugulosa utrinque rotundatis, facie interiore anguste sulcata.—Brazil (State of São Paulo): Jabaquara, December, 1914, *A. C. Brade* 7056 (Herb. Inst. Biol. 6802; type in Herb. Field Mus.). Santo Amaro, December, 1906, *A. Usteri* (Herb. Inst. Biol. 11831). S. Caetanho, October, 1922, *A. Gehrt* 8045.

The collections cited were determined by Krause as *Borreria asclepiadea* Cham. & Schlecht., which Schumann in *Flora Brasiliensis* reduced to synonymy under *B. Poaya* (St. Hil.) DC. As described, *B. asclepiadea* differs from the São Paulo plant in having flowers about twice as large, and probably Schumann was correct in his disposition of that name.

Chione chiapasensis Standl., sp. nov.—Arbor 8-metralis omnino glabra, trunco 35 cm. diam., ramulis in sicco fuscis ad nodos aliquanto compressis, internodiis solemniter elongatis; stipulae 5–6 mm. longae oblongo-ovatae 5–6 mm. longae acutae deciduae; folia petiolata crasse membranacea vel subcoriacea, petiolo 1–2.3 cm. longo; lamina late elliptica usque elliptico-oblonga 12–15 cm. longa 4.5–7 cm. lata subito breviterque acuminata, acumine obtuso, basi acuta usque acuminata, interdum subito acutata, supra in sicco fusca, subtus pallidior et aliquanto brunnescens, costa gracili prominente, nervis lateralibus utroque latere ca. 7 angulo semirecto adscendentibus tenerrimis subarcuatis, venulis obsoletis; inflorescentia terminalis cymoso-corymbosa ca. 6 cm. longa et 7 cm. lata 7 cm. longe pedunculata, laxe subpauciflora, pedicellis fructiferis usque 4 mm. longis; fructus teres 2-locularis ambitu anguste oblongus, basi et apice acutiusculus 15–18 mm. longus 5 mm. latus lucidus calyce parvo persistente coronatus; calyx paullo ultra 1 mm. altus breviter obtuse dentatus.—Mexico: River side in virgin forest, "Rvina," Palenque, Chiapas, July, 1939, *E. Matuda* 3675 (type in Herb. Field Mus.).

The fruits are much larger than those of any other species of the genus. Those of *C. mexicana* Standl., the only other species known from Mexico, are only 1 cm. long.

Chione costaricensis Standl., sp. nov.—Arbor 7-metralis omnino glabra, ramis gracilibus teretibus ochraceis ad nodos aliquanto compressis, internodiis brevibus; stipulae deciduae 4–5 mm. longae triangulari-ovatae acutae; folia petiolata crasse membranacea, petiolo 1–1.5 cm. longo; lamina elliptico-ovata usque lanceolato-oblonga 6.5–14.5 cm. longa 3.5–7 cm. lata breviter acuminata vel acutata, acumine obtuso, basi acutiuscula usque rotundata et subito contracta, supra in sicco fusca, subtus paullo pallidior, costa prominente, nervis lateralibus utroque latere ca. 9 angulo latiusculo abeuntibus subarcuatis tenerrimis, venulis inconspicuis laxe reticulatis; inflorescentia terminalis cymoso-corymbosa ca. 4 cm. longa atque 6 cm. lata laxe multiflora 3 cm. longe pedunculata, basi foliaceo-bracteata, bracteis minutis, pedicellis crassis usque 14 mm. longis prope medium bracteatis; hypanthium clavatum 3 mm. longum basin versus sensim attenuatum; calyx late campanulatus 5 mm. latus vix ultra 2 mm. altus, margine breviter lobato, lobis rotundatis; corollae tubus 5–6 mm. longus et 4 mm. latus sursum paullo dilatatus, lobis 4 rotundato-ellipticis apice rotundatis tubo fere aequilongis intus glabris; stamina exserta, antheris anguste oblongis 3.5 mm. longis.—Costa Rica: Villa Quesada, Cantón de San Carlos, Prov. Alajuela, alt. 825 meters, edge of Caribbean rain forest, March 14, 1939, *Austin Smith* F1778 (type in Herb. Field Mus.).

This is the first species of *Chione* to be reported from Central America. It is similar to the Mexican *C. mexicana* Standl., which differs in having smaller, short-pedicellate flowers and relatively somewhat narrower leaves.

Chomelia triantha Standl., sp. nov.—Frutex gracilis 2-metralis, ramis subteretibus nigrescentibus nodosis, internodiis abbreviatis, novellis ferrugineis hirtellis; stipulae persistentes e basi triangulari longe subulato-attenuatae 4.5 mm. longae; folia parva breviter petiolata crasse membranacea, petiolo crassiusculo 3–6 mm. longo sparse strigilloso; lamina lanceolato-oblonga 4.5–6.5 cm. longa 1.3–2.5 cm. lata acuta vel longiuscule acuminata, basi obtusa vel acuta, supra viridis lucida glabra, costa prominente, subtus pallidior brunnescens, in axillis nervorum sparse breviter albo-barbata, aliter glabra vel glabrata, costa gracillima prominente, nervis lateralibus utroque latere ca. 6 angulo angusto adscendentibus tenerrimis prominulis, venulis obscuris laxe reticulatis; inflorescentiae axillares solitariae triflorae, pedunculo fere filiformi 1.7–3.5 cm. longo fere glabro, floribus sessilibus, bracteis filiformibus 4–5 mm. longis; hypanthium anguste oblongum 2.5 mm. longum dense albido-strigosum, calycis lobis subulatis viridescentibus erectis 3 mm. longis; corolla alba extus sparse strigosa ca. 22 mm. longa, tubo gracillimo vix ultra 1 mm. lato, lobis ovato-oblongis patentibus cuspidatis 5 mm. longis intus glabris, dorso paullo infra apicem appendice subulato ca. 0.5 mm. longo auctis; stylus breviter exsertus.—Colombia: Departamento de Boyacá, in thickets, Orocué, alt. 140 meters, May 12, 1939, *Oscar Haught* 2822 (type in Herb. Field Mus.).

Crusea Gentryi Standl., sp. nov.—Herba erecta annua(?) gracilis sparse ramosa, 35 cm. alta vel ultra, caule paullo ultra 1 mm. crasso subacute tetragono glabro, internodiis foliis multo longioribus; stipularum setae utroque latere ca. 5 subulatae usque 3 mm. longae; folia parva brevissime petiolata membranacea anguste lanceolata 2–3.5 cm. longa 5–8 mm. lata longe angusteque attenuata, basi obtusa subito contracta, supra in sicco cinereo-viridia enervia scaberula, subtus pallidiora glabra, costa tenui prominente, nervis lateralibus utroque latere 3–4; capitula densissime multiflora fere 2 cm. lata longissime pedunculata, basi bracteis pluribus foliis conformibus et usque 2.5 cm. longis fulcrata; flores tetrameri, hypanthio glabro; calycis lobi lineari-filiformes 5 mm. longi basi paullo dilatati scaberulo-ciliati patuli; corolla extus minute puberula, tubo gracili 5 mm. longo sursum subdilatato, lobis 4 lineari-oblongis ca. 4 mm. longis patentibus acutiusculis intus glabris; stamina longiexserta, filamentis tenerrimis, antheris oblongis 1 mm. longis; fructus cocci ovales 2 mm. longi utrinque obtusi laeves glabri.—Mexico: Quiricoba, Distrito de Alamos, Sonora, November 12, 1933, *Howard Scott Gentry* 766M (type in Herb. Field Mus.).

Diodia Mello-Barretoi Standl., sp. nov.—Herbacea vel suffruticosa ut videtur erecta rigida ramosa stricta 40 cm. alta vel ultra, caulibus crassis nigrescentibus dense scaberulis, dense foliatis, internodiis foliis multo brevioribus, nodis plus minusve incrassatis; stipularum setae 1–5 mm. longae rigidae scaberulae; folia parva oblique adscendentia sessilia rigide coriacea lanceolata vel lineari-lanceolata 4–14 mm. longa basi 2–5 mm. lata apice subulato-mucronata cymbiformia enervia lucida glabra, supra late concava, subtus acute carinata vel rotundato-convexa, ad margines cartilagineos minute scaberula; flores in axillis sessiles solitarii, hypanthio dense scaberulo, dentibus calycis triangularibus erectis 1 mm. longis vel ultra acutis vel acuminatis; corolla extus furfuraceo-puberula ca. 5 mm. longa, tubo superne late dilatato, lobis triangulari-ovatis tubo duplo brevioribus acutiusculis intus glabris; stamina breviter exserta, antheris oblongis 1.2 mm. longis; fructus non visus.—Brazil: Campo, Sierra do Cipó, km. 116, Municipio Santa Luzia, January 13, 1934, *H. Mello Barreto* 3541 (Herb. Jard. Bot. Bello Horizonte 11483; type in Herb. Field Mus.); February 2, 1938, *Mello Barreto* 9274 (Herb. Jard. Bot. Bello Horizonte 26167).

The plant differs conspicuously from other species in its strict, erect, branched habit, the conspicuously nodose stems, and especially in the small, suberect, rigid, cymbiform leaves, in which the costa is either conspicuous and keel-like or quite obsolete.

Galium Cuatrecasasii Standl., sp. nov.—Herba repens vel adscendens sat dense ramosa, ramis gracillimis intertextis usque 30 cm. longis vel ultra ad angulos minute scaberulis, internodiis foliis plus quam duplo longioribus; folia plerumque 6-verticillata oblonga vel superiora paullo latiora, plerumque 3–5 mm. longa obtusa vix apiculata basin versus paullo angustata atque fere sessilia, 1-nervia, ad costam marginesque scaberulo-ciliata; flores parvi in cymulas trifloras terminales solitarias vel ternatas dispositi, cymulis vulgo basi foliatis et foliis fere occultis, pedunculis florum lateralium folia subaequantibus glabris; corolla tetramera paullo ultra 1 mm. longa glabra, lobis late ovatis obtusis; fructus baccatus glaber subglobosus 1.5 mm. longus apice late rotundatus.—Colombia: Sabana de Bogotá, Dept. Cundinamarca, alt. 2,600 meters, December

29, 1938, *José Cuatrecasas* 468 (type in U. S. Nat. Herb.; fragment in Herb. Field Mus.).

It is somewhat surprising to receive from the not exactly unexplored Bogotá region a *Galium* quite unlike the few other species known from Colombia. This one, however, does not approach any of those known from Colombia, nor has it close relatives elsewhere in the northern Andes.

Galium juniperinum Standl., sp. nov.—Herbacea vel suffruticosa multiramosa, caulibus rigidis gracilibus pallidis 60 cm. longis vel ultra dense scaberulis, internodiis plerumque foliis longioribus; folia parva quaternata adscendentia vel subadpressa, interdum subpatula, subulata rigida 2-4 mm. longa sessilia, apice spinoso-subulata, 1-nervia glabra, marginibus minute scaberulis; cymulae axillares solitariae vulgo triflorae inconspicuae saepius foliis vix longiores breviter pedunculatae, floribus breviter pedicellatis, bracteis triangulari-subulatis pedicellis brevioribus; corolla luteo-viridis 4-loba 2 mm. lata, lobis ovali-ellipticis obtusissimis; fructus ut videtur succosus dense vel sparse setulis rectis pallidis patulis obtectus.—Mexico: Earth wall of canyon, Galeana, Nuevo León, alt. 1,620 meters, August 4, 1939, *V. H. Chase* 7772 (type in Herb. Field Mus.).

The present plant is one of a large collection obtained in Mexico during the summer of 1939 by the Mexican Biological Expedition of Students of the University of Illinois. It is an unusually distinct species, in habit strongly resembling certain species of *Relbunium,* to which genus it is certain to be referred at first glance. The setulose fruit and, of course, the absence of an involucre at the base of the flower necessitate its reference to *Galium.*

Gonzalagunia Rojasii Standl., sp. nov.—Arbor 6-metralis, ramulis crassis subteretibus ochraceis vel pallide brunnescentibus nodosis, novellis dense pilis longis rigidulis pallidis hispidis, internodiis saepe valde elongatis; stipulae e basi late triangulari acuminatae usque 8 mm. longae persistentes; folia magna breviter petiolata membranacea, petiolo crassiusculo 1-2 cm. longo hispido; lamina elliptica bel obovato-elliptica 11-20 cm. longa 5-9.5 cm. lata acuta vel saepius breviter acuminata, basi acuta vel interdum longiuscule angustata et plus minusve decurrens, supra viridis sparse pilis brevibus hispidula, subtus vix pallidior ubique ad nervos venasque breviter adpresso-pilosula, costa gracili elevata, nervis lateralibus utroque latere ca. 9 angulo latiusculo adscendentibus arcuatis tenerrimis marginem fere attingentibus; inflorescentia spiciformis pedunculata 16–21 cm. longa, floribus in cymulas parvas paucifloras sessiles dispositis, rhachi crassa hispida, cymulis numerosis remote insertis, bracteis minutis subulatis vel anguste triangularibus inconspicuis; hypanthium latum basi rotundatum 1.5 mm. longum sparse puberulum vel fere glabrum, calyce 1 mm. alto brevissime remote 4-dentato; corolla pallide viridescenti-lutea extus sparse minute strigillosa, tubo gracili tereti 6 mm. longo, lobis ovato-rotundatis vix 2.5 mm. longis; bacca 4-locularis depresso-globosa 4–5 mm. lata.—Guatemala: Damp forest, El Muro, below Santa María de Jesús, Dept. Quezaltenango, alt. about 1,200 meters, March 1, 1939, *Paul C. Standley* 67145 (type in Herb. Field Mus.). Dense damp forest, Finca Pireneos, below Santa María de Jesús, alt. 1,350 meters, March 11, 1939, *Standley* 68344.

Local name, Cachito de venado. The species is well marked by the dense pubescence of very long, stiff, spreading hairs that covers the branches. It is named for Professor Ulises Rojas, Director of the Jardín Botánico of Guatemala, in whose company and as whose guest the second collection was made, at Finca Pireneos. Upon this and other days Professor Rojas was a most competent and congenial guide to some of the most interesting regions of the Guatemalan Occidente.

Hamelia barbata Standl., sp. nov.—Frutex vel arbuscula 3–7.5 m. alta, ramis gracilibus viridibus minute pallide lenticellatis glabris, internodiis brevibus; stipulae triangulari-acuminatae 3–4 mm. longae; folia opposita petiolata membranacea, petiolo gracili glabro 1.2–2.5 cm. longo; lamina oblongo-oblanceolata vel oblongo-elliptica 14–20 cm. longa 4.5–6 cm. lata subito longe angusteque acuminata, basin versus angustata, basi ipsa acuta vel acuminata, supra viridis glabra, subtus fere concolor in axillis nervorum dense pallide villoso-barbata, aliter glabra, costa gracillima prominente, nervis lateralibus utroque latere ca. 10 tenerrimis obliquis subarcuatis angulo latiusculo adscendentibus; inflorescentia terminalis cymoso-corymbosa breviter pedunculata laxe multiflora ca. 4.5 cm. longa et 7 cm. lata, floribus secundis glabris, pedicellis gracilibus 2–3 mm. longis; hypanthium oblongo-turbinatum 3 mm. longum, calycis dentibus vix ultra 0.5 mm. longis late deltoideis vel rotundatis et apiculatis; discus valde elevatus 1.3 mm. altus; corolla aurantiaca tubulosa vel superne dilatata et usque 5 mm. lata, ca. 18 mm. longa, lobis latissimis ca. 2 mm. longis; stamina inclusa.—Guatemala: Wet forest, Finca Monterrey, south slope of Volcán de Fuego, Dept. Escuintla, alt. about 1,200 meters, February 5, 1939, *Paul C. Standley* 64569 (type in Herb. Field Mus.). Panajabal, Dept. Chimaltenango, 1,350 meters, *Standley* 62113. In forest, Finca Moca, Dept. Suchitepéquez, alt. 810 meters, January, 1935, *Skutch* 2058.

The only closely related species is *Hamelia longipes* Standl., of the Atlantic lowlands of Guatemala and Honduras, which differs in having much longer pedicels, and lacks the barbate nerve axils characteristic of *H. barbata.*

Hamelia Haughtii Standl., sp. nov.—Frutex vel arbuscula, ramulis gracilibus dense pilis longiusculis patulis pilosis, internodiis elongatis; stipulae lineari-attenuatae 8–10 mm. longae pilosae; folia magna longipetiolata membranacea opposita, petiolo gracili 3.5–6 cm. longo patule piloso; lamina oblongo-ovata vel lanceolato-oblonga 16–23 cm. longa 6–8.5 cm. lata longiacuminata, basi acuta et interdum subcontracta, supra viridis, ad costam pilosa, aliter glabra, subtus ubique dense pilis rigidulis fulvis vel brunnescentibus pilosa, nervis lateralibus utroque latere ca. 11 arcuatis tenerrimis; inflorescentia terminalis cymoso-corymbosa ca. 5 cm. longa atque 10 cm. lata 3 cm. longe pedunculata, laxe multiflora, ramis secundifloris, floribus arcte sessilibus; hypanthium 3 mm. longum oblongum basi rotundatum, dense ferrugineo-pilosum, calycis dentibus brevissimis triangularibus; corolla laete lutea extus sparse minute pilosula, tubo 2 cm. longo sursum sensim dilatato fauce 6 mm. lato, lobis rotundo-obovatis ca. 5 mm. longis apice late rotundatis intus sparse puberulis.—Colombia: Puerto Araujo, Dept. Santander, in moist, lowland forest, April 15, 1937, *Oscar Haught* 2176 (type in Herb. Field Mus.); in swamp forest, June 6, 1935, *Haught* 1751.

The principal distinctive characters are the large corollas and the abundant, long, soft pubescence of the leaves and inflorescence.

Hoffmannia laxa Standl., sp. nov.—Frutex 2-metralis ut videtur omnino glaber, ramis teretibus in sicco fuscis, internodiis plerumque 3–6 cm. longis; folia modica longipetiolata tenuiter membranacea, petiolo gracillimo 4–5 cm. longo superne longe angusteque marginato; lamina elliptica vel late ovato-elliptica 12–16 cm. longa 6.5–8 cm. lata sensim vel subabrupte acuminata, basi abrupte cuneato-acuta vel acuminata et longe anguste decurrens, supra intense viridis, costa venisque manifestis sed vix elevatis, subtus multo pallidior, costa gracili prominente, nervis lateralibus utroque latere ca. 9 arcuatis angulo lato saepe recto divergentibus teneris prominulis, venis obscuris et laxe reticulatis; inflorescentiae

numerosae axillares fasciculatae laxissime pauciflorae petiolis subaequilongae gracillime ca. 2.5 cm. longe pedunculatae, pedicellis fere filiformibus 4–7 mm. longis; hypanthium obovoideum fere 2 mm. longum basi obtusum, calycis dentibus vix 0.6 mm. longis late triangularibus acutis erectis; corolla in alabastro glabra 4 mm. longa acuta vel acutiuscula, tubo ut videtur brevissimo, lobis tubo duplo longioribus.—Costa Rica: Sucre, Cantón de San Carlos, Prov. Alajuela, in Caribbean rain forest, alt. 1,000 meters, March 30, 1939, *Austin Smith* F1851 (type in Herb. Field Mus.).

"A shrub with several erect stems, the bark dull, dark green. Leaves very dark green, faintly shining above, the petiole sometimes dull pink, the under surface pale. Flowers pale green, the peduncle pale carmine." The species is noteworthy for the extremely lax, few-flowered inflorescences with elongate pedicels.

Hoffmannia Wilsonii Standl., sp. nov.—Frutex 2–3-metralis, ramis gracilibus teretibus ochraceis rimosis, internodiis plerumque elongatis, novellis subdense breviter sordido-villosulis; stipulae vix ultra 2 mm. longae, e basi late triangulari acuminatae; folia modica longipetiolata tenuiter membranacea, petiolo gracili 3–5.5 cm. longo breviter villosulo; lamina ovato-elliptica vel oblongo-elliptica 12–18 cm. longa 6–8 cm. lata subabrupte longiacuminata, basi acuta vel subobtusa, supra viridis glabra, subtus paullo pallidior ad nervos venasque adpresso-pilosa, nervis lateralibus utroque latere ca. 8 angulo lato adscendentibus arcuatis, venis laxe reticulatis; flores in axillis pauci dense cymoso-aggregati sessiles vel breviter pedicellati, cymulis sessilibus vel subsessilibus; hypanthium oblongo-turbinatum ca. 2 mm. longum glabrum vel sparsissime pilosulum, calycis dentibus vix 1 mm. longis triangulari-subulatis erectis acutis; corolla extus glabra vel hinc inde pilosa 7 mm. longa, tubo cylindraceo, lobis angustis acutiusculis tubo multo longioribus.—Guatemala: In virgin forest, Finca Los Alpes, Dept. Alta Verapaz, alt. 1,200 meters, March 21, 1939, *C. L. Wilson* 344 (type in Herb. Field Mus.).

Malanea Duckei Standl., sp. nov.—Frutex scandens, ramis gracilibus teretibus atque densissime pilis longis adscendentibus rigidulis ferrugineis vel pallidis pilosis, internodiis brevibus vel elongatis; stipulae persistentes late ovatae 7–8 mm. longae dense pilosae; folia majuscula breviter petiolata subcoriacea in sicco fusco-brunnescentia, petiolo crasso 6–10 mm. longo piloso; lamina elliptica vel late elliptica 8–14 cm. longa 5–10 cm. lata obtusa vel acutiuscula, basi subrotundata vel obtusa, supra lucida, costa nervisque ut quoque venis impressis, ad costam nervosque adpresso-pilosa, aliter glabra vel glabrata, subtus brunnescens ubique pilis longiusculis laxe adpressis pilosa, costa gracili elevata, nervis lateralibus utroque latere ca. 9 angulo semirecto vel latiore adscendentibus arcuatis elevatis, prope marginem arcuato-junctis, venulis elevatis laxe reticulatis; flores parvi glomerulato-spicati, spicis axillaribus 4–5.5 cm. longis usque 3 cm. longe pedunculatis, glomerulis florum ca. 7 mm. diam. sessilibus oppositis, paribus remotis, rhachi dense patule pilosa, floribus arcte sessilibus, bracteis minutis; calyx cum hypanthio glaber campanulatus 1.5 mm. longus, margine undulato, ferrugineus; corolla albida 5 mm. longa extus densiuscule albo-strigosa, tubo cylindraceo superne vix dilatato, lobis 4 triangulari-oblongis patentibus obtusis intus albo-lanatis; stamina exserta, antheris oblongis 1 mm. longis.—Brazil: Manáos, circa Cachoeira do Mindú, silva non inundabili leviter paludosa, July 12, 1937, *A. Ducke* 34799 (type in Herb. Field Mus.); same locality, May 12, 1937, *Ducke* 494.

Manettia Skutchii Standl., sp. nov.—Herbacea volubilis omnino glabra, caule ca. 3 mm. crasso sulcato, internodiis foliis longioribus; stipulae latae ca. 2.5 mm. altae apice rotundatae; folia majuscula petiolata in sicco coriacea, petiolo crasso usque 14 mm. longo superne marginato; lamina late elliptica vel oblongo-elliptica 6–9 cm. longa 3–5 cm. lata subito longiacuminata, basi obtusa vel subrotundata atque abrupte contracta et decurrens, supra in sicco cinerea sublucida, costa nervisque plus minusve impressis, lamina subbullata, subtus fere concolor, costa crassa, nervis lateralibus utroque latere ca. 5 teneris prominentibus solemniter arcuatis angulo lato adscendentibus, venis paucis prominulis laxe reticulatis; inflorescentiae axillares laxe pauciflorae racemose cymoso-paniculatae foliatae usque 8 cm. longae ut videtur recurvae, pedicellis crassis 5–15 mm. longis, bracteis minutis; hypanthium obovoideum 3.5 mm. longum; calycis tubus latus 2 mm. longus, lobis 4 ca. 3 mm. longis late ovalibus vel subrotundatis incrassatis et carnosis, apice late rotundatis vel subtruncatis, patentibus; corolla pallido-rosea in sicco subcoriacea, tubo crasso 13–15 mm. longo sursum solemniter dilatato et fauce 6 mm. lato, basi 4 mm. lato, in fauce villoso, lobis ovato-oblongis patentibus vel subrecurvis ca. 8 mm. longis apiculatis et acutiusculis, intus ad apicem villosis; antherae semiexsertae.—Ecuador: Vicinity of Puyo, Prov. Napo Pastaza, eastern foothills of the Andes, alt. 750–1,000 meters, September, 1939, *Alexander F. Skutch* 4525 (type in Herb. Field Mus.).

A related species is *Manettia divaricata* Wernham, of Peru and Bolivia, which differs in having much thinner leaves and conspicuously narrower calyx lobes. In *M. Skutchii* the calyx lobes are united below to form a distinct tube, as in *M. divaricata.*

Palicourea Cardenasii Standl., sp. nov.—Frutex 2-metralis, ramis crassiusculis dense minute puberulis subteretibus, internodiis 2 3.5 cm. longis; stipulae persistentes basi in vaginam brevissimam connatae, lobis erectis fere foliaceis semiovatis approximatis 5–7 mm. longis acutis minutissime puberulis vel fere glabris; folia inter minora petiolata subcoriacea, petiolo gracili 7–12 mm. longo minutissime puberulo; lamina elliptico-lanceolata vel oblongo-lanceolata 7–9 cm. longa 2.5 3.5 cm. lata longe angusteque interdum falcate acuminata, basi cuneato-angustata, supra in sicco nigrescens ubique scaberulo-puberula, costa nervisque prominentibus, subtus fere concolor ad nervos costamque breviter pilosula vel adpresso-pilosula, inter nervos glabrata, costa gracili prominente, nervis lateralibus utroque latere ca. 10 obliquis angulo ca. semirecto adscendentibus leviter arcuatis gracilibus prominentibus, venulis vix prominulis laxe reticulatis; inflorescentia terminalis erecta parva thyrsoideo-paniculata 5 8 cm. longa 3–4 cm. lata sat dense multiflora ca. 2 cm. longe pedunculata, pedunculo ramisque dense sordido-puberulis, ramis infimis valde adscendentibus brevibus, floribus sessilibus aggregatis; hypanthium crassum vix ultra 0.6 mm. altum, calyce campanulari ca. 0.8 mm. alto subtruncato vel late breviter sinuato-dentato; corolla lutea anguste tubulosa ca. 7 mm. longa extus sparse minute puberula, in alabastro apice obscure lobulata, lobis oblongis patentibus vel subreflexis dimidium tubi fere aequantibus intus glabris obtusis; antherae lineares subexsertae.—Bolivia: Chimoré, Cochabamba, at edge of forest, alt. 1,000 meters, November 2, 1937, *Martín Cárdenas* 2072 (type in U. S. Nat. Herb.; fragment in Herb. Field Mus.).

A species with no outstanding characters, but quite unlike any one known previously from Bolivia.

Palicourea Danielis Standl., sp. nov.—Frutex 3–4-metralis, ramis sat crassis teretibus, internodiis 2.5–4.5 cm. longis fere omnino glabris; stipulae crassae in vaginam subtruncatam vix ultra 2 mm. longam puberulam coalitae, lobis utroque latere 2 usque 3.5 mm. longis erectis rigidis triangulari-subulatis attenuatis persistentibus; folia inter minora breviter petiolata crasse coriacea, petiolo crasso 3–4 mm. longo puberulo vel glabrato; lamina ovata vel lanceolato-ovata 5–7.5 cm. longa 2–3 cm. lata subabrupte longiacuminata, basi obtusa, supra in sicco lucida glabra, nervis venisque profunde impressis, subtus ubique dense minute hirtella vel fere tomentulosa, costa crassa solemniter elevata, nervis lateralibus utroque latere ca. 12 insigniter elevatis subarcuatis approximatis, venulis crassis elevatis arcte reticulatis sed vix conspicuis, marginibus valde lateque revolutis; inflorescentia terminalis recta thyrsiformis in statu fructifero ca. 5 cm. longa atque 4 cm. lata, pedunculo 3.5 cm. longo dense sordido-pilosulo, ramis infimis radiatim divergentibus brevibus dense sordido-pilosulis, floribus sessilibus vel subsessilibus aggregatis ut dicitur luteis; hypanthium dense hispidulum, lobis calycis brevibus acutiusculis; corolla perfecta non visa, 5 mm. longa vel ultra dense hispidula; fructus ellipsoideus 5 mm. longus sparse hispidulus, pyrenis solemniter costatis.—Colombia: San Pedro, Dept. Antioquía, December, 1937, *Brother Daniel & Brother Tomás* 1554 (type in U. S. Nat. Herb.; fragment in Herb. Field Mus.).

The material, unfortunately, is not well preserved, but evidently it represents an unusually well marked species, as species of this genus are limited. The most conspicuous feature is found in the very thick, coriaceous leaves, with the lateral nerves salient and riblike on the lower surface, and strongly immersed on the upper surface.

Posoqueria brachyantha Standl., sp. nov.—Arbor parva omnino glabra, ramis sat gracilibus teretibus in sicco fuscis, internodiis bene elongatis; stipulae persistentes coriaceae triangulares obtusae adpressae 7–10 mm. longae; folia modica breviter petiolata coriacea in sicco fusco-brunnescentia, petiolo crasso 8–10 mm. longo; lamina elliptica usque late elliptica vel rotundo-elliptica 7.5–11.5 cm. longa 5–8 cm. lata obtusa vel acuta, interdum subrotundata, basi obtusa vel rotundata, supra lucida, subtus paullo pallidior, costa crassa prominente, nervis lateralibus utroque latere ca. 5 angulo lato adscendentibus teneris prominentibus subarcuatis, venis obsoletis; inflorescentia cymoso-corymbosa terminalis sublaxe multiflora breviter pedunculata, pedicellis crassis usque 1 cm. longis; hypanthium turbinatum 5 mm. longum superne ca. 4 mm. latum basi acutum; calyx late campanulatus 2.5–3 mm. altus ad tertiam partem lobatus, lobis late rotundatis ciliatis; corolla alba, tubo gracili 4–6 cm. longo 2–3 mm. lato, lobis ovato-oblongis 8–10 mm. longis apice rotundatis ciliolatis; antherae lineares lobos corollae aequantes.—Brazil: Cucuhy, Rio Negro superior, in rupibus ad basin montis granitici secus rivulum, September 9, 1935, *A. Ducke* 34992 (type in Herb. Field Mus.).

From all its close relatives the species is distinguished by its unusually short corollas.

Remijia amphithrix Standl., sp. nov.—Arbuscula 3-6-metralis, ramulis crassis dense breviter pilosulo-tomentosis; stipulae ovali-ovatae fere 2.5 cm. longae 11 mm. latae obtusae extus densissime adpresso-pilosae; folia magna breviter petiolata subcoriacea, petiolo crasso 2-3 cm. longo densissime breviter patenti-piloso; lamina late elliptica ca. 29 cm. longa et 15 cm. lata obtusa et breviter cuspidata, basi subrotundata et abrupte breviter contracta, supra in sicco brunnescens sparsiuscule pilis brevibus patulis vel subadpressis fulvis conspersa et sparse pilis longis patentibus hirsuta, costa venisque non elevatis, subtus pallide fulva, ad venas costamque dense strigosa, aliter pilis brevibus subpatulis densissime pilosa, costa crassa elevata, nervis lateralibus utroque latere ca. 16 teneris prominentibus, inferioribus angulo fere recto abeuntibus, superioribus angulo angustiore usque semirecto adscendentibus arcuatis marginem attingentibus, venis tomento occultis; inflorescentia spiciformis interrupta ca. 17 cm. longe pedunculata, inferne aliquanto foliaceo-bracteata, floribus in cymulas capituliformes densissime multifloras sessiles vel infimas usque 2 cm. longe pedunculatas dispositis sessilibus; cymulae oppositae, paribus infimis usque 8 cm. distantibus; hypanthium campanulatum basi obtusum 2.5 mm. longum dense ochraceo-tomentosum, calyce vix ultra 2 mm. longo adpresso-pilosulo inaequaliter dentato, dentibus late ovatis acutiusculis; corolla pentamera extus dense adpresso-pilosa, tubo 10-12 mm. longo sursum vix dilatato fauce 2-2.5 mm. lato, lobis usque 8 mm. longis patentibus lanceolato-linearibus intus glabris vel sparse minutissime puberulis apicem subobtusum versus sensim attenuatis; stamina inclusa.—Colombia: Comisaría El Vichada, edge of forested area about 70 km. southeast of Orocué, alt. 150 meters, April 25, 1939, *Oscar Haught* 2789 (type in Herb. Field Mus.).

From all other Colombian species of the genus this is conspicuously different in the large and wide leaves that are broad and rounded at the base. The collector states that the white flowers have a peculiar odor that is not very agreeable.

Remijia asperula Standl., sp. nov.—Arbuscula, ramis crassis subteretibus vel obtuse tetragonis dense hirsuto-pilosis vel glabratis, internodiis abbreviatis; stipulae magnae oblongo-ovatae 4 cm. longae et 2 cm. latae vel majores obtusae vel breviter acuminatae intus glabrae extus densissime pilis longis subadpressis hispido-pilosae; folia magna opposita breviter petiolata subcoriacea, petiolo crasso 1-2 cm. longo vel paullo ultra dense hirsuto; lamina oblanceolato-oblonga usque oblongo-obovata 22-30 cm. longa 7.5-14 cm.

lata acuminata vel subobtusa et breviter cuspidata, basi acuta vel contracta et anguste decurrens, basin versus plus minusve angustata, supra in sicco fusca sublucida hirsuta et scabro-pilosula, tactu asperula, costa nervisque non elevatis, subtus pallide brunnescens ubique dense pilis longis submollibus patentibus fulvis hirsuta, costa gracili elevata, nervis lateralibus utroque latere ca. 18 teneris prominentibus angulo latiusculo divergentibus fere rectis marginem attingentibus, venis inconspicuis laxe reticulatis; flores majusculi dense cymoso-aggregati, cymulis dense multifloris saepe capituliformibus, post anthesin laxioribus, bracteatis paniculatis, paniculis axillaribus usque 17 cm. longe pedunculatis pauciramosis usque 25 cm. longis, ramis basalibus usque 4.5 cm. longis sed vulgo brevioribus dense brunneo-pilosis; bracteae ex parte magnae et foliosae, plerumque ellipticae vel ovatae et 10–12 mm. longae dense strigoso-sericeae; pedicelli nulli vel usque 4 mm. longi crassiusculi; hypanthium obovoideum 3 mm. longum basi subobtusum densissime longipilosum; calyx 3–4 mm. longus extus dense adpresso-pilosus ad medium dentatus, dentibus triangularibus acutis erectis; corolla alba in alabastro fere 15 mm. longa sursum angustata extus densissime pilis longis adscendentibus brunnescentibus pilosa; capsula anguste oblonga vel lanceolato-oblonga 2–3 cm. longa ca. 7 mm. lata sursum angustata, basi acutiuscula, densissime pilis longis et brevibus intermixtis brunneis vel ferrugineis piloso-tomentosa; semina numerosissima, parte seminifera ca. 2 mm. longa utrinque ala albida tenui ca. 2 mm. longa aucta.—Brazil: Manáos, civ. Amazonas, silva secundaria non inundabili loco arenoso humido prope cataractam altam fluminis Tarumá, May 13, 1936, *A. Ducke* 22854 (type in Herb. Field Mus.).

The species bears some superficial resemblance to *R. Ulei* Krause, apparently a rather common species of the Upper Amazon, but that has only rather sparse and very inconspicuous pubescence, and its leaves are relatively much longer and narrower. The capsules of the two species are similar.

Remijia Duckei Standl., sp. nov.—Arbuscula, ramis crassis subteretibus dense longipilosis, internodiis abbreviatis; stipulae tenues ferrugineae oblongo-lanceolatae vel ovato-oblongae 5–10 cm. longae basi usque 3 cm. latae longiattenuatae extus longipilosae diutius persistentes; folia magna opposita petiolata subcoriacea, petiolo crasso 2–3 cm. longo piloso-tomentoso; lamina oblonga, anguste lanceolato-oblonga vel late elliptico-oblonga 15–55 cm. longa 5–20 cm. lata, acuta vel breviter acuminata, basi acutiuscula usque rotundata, supra in sicco fusco-brunnescens, primo praesertim ad costam nervosque laxe pilosa, cito glabrata, sublucida, costa nervisque non elevatis, subtus pallide brunnescens vel brunneo-ochracea in areolis intra nervulos minutissime fere microscopice pallido-tomentella, aliter sat dense laxeque pilosa vel ad nervos adpresso-pilosa, serius glabrescens, costa gracili elevata, nervis lateralibus utroque latere ca. 21 teneris elevatis angulo latiusculo adscendentibus fere rectis juxta marginem abrupte sursum curvatis et in marginem desinentibus, venulis prominulis arctissime reticulatis; flores majusculi in cymulas parvas dense paucifloras bracteatas dispositi, cymulis ad apices ramorum cymosis paniculam usque 25 cm. longe pedunculatam 7–25 cm. longam racemiformem vel late pyramidalem efformantibus, ramis laxe subsparse piloso-tomentosis, infimis obliquis usque 6 cm. longis; bracteae lineari-filiformes usque 2 cm. longae; flores sessiles vel brevissime pedicellati; hypanthium obovoideum 3 mm. longum dense pilis longis subadpressis pilosum, calyce 4–5 mm. longo campanulato breviter vel longius dentato, dentibus triangularibus usque fere subulatis; corolla alba in alabastro 2.8 cm. longa sursum attenuata extus densissime pilis longis pallidis adpressis sericea, lobis lanceolato-linearibus ca. 15 mm. longis longiattenuatis; capsula oblongo-clavata 2.5–3 cm. longa apice obtusa, basi angustata, valvulis ca. 8 mm. latis.—Brazil: Santa Izabel, Rio Negro, civ. Amazonas, ad ripas Igarapé Dará, September 9, 1935, *A. Ducke* 35058 (type in Herb. Field Mus.).

A relative, apparently, of *R. firmula* Wedd., also of the upper Amazon and the Rio Negro, which has capsules only 1 cm. long, according to description, and much less abundant pubescence. The type material of *R. Duckei* consists of three sheets of specimens. One of these bears a leaf of considerable morphological interest, since the upper half of the blade is very coarsely and regularly dentate. This is the closest approach to a truly dentate leaf that I have ever seen among American Rubiaceae, and is scarcely suggestive even of the regularly pinnatifid leaves found in some species of *Pentagonia.*

Stachyarrhena acuminata Standl., sp. nov.—Arbor parva glabra, ramulis cinnamomeis, cortice exfoliante, internodiis 6–15 mm. tantum longis teretibus; folia magna petiolata coriacea, petiolo crassiusculo 10–15 mm. longo; lamina anguste oblongo-lanceolata 18–28 cm. longa 5–7 cm. lata longiacuminata, basin versus sensim angustata, basi ipsa acutissima, supra lucida, costa nervisque prominentibus, subtus brunnescens minute papillosa, costa gracili elevata, nervis lateralibus utroque latere ca. 15 angulo lato interdum fere recto abeuntibus teneris prominentibus arcuatis prope marginem sursum curvatis, venis obscuris; inflorescentia terminalis erecta 2–2.5 cm. longa ca. 3 cm. lata anguste paniculata 1–1.5 cm. longe crasse pedunculata, floribus in parte superiore spicatis, inferioribus in cymulas parvas paucifloras dispositis, pedicellis crassissimis vix ad 3 mm. longis; hypanthium brevissimum, calyce late campanulato 2.5 mm. alto 3 mm. lato lucido truncato coriaceo; corolla coriacea alba, tubo lato 4 mm. longo, lobis late ovatis obtusis suberectis ca. 3.5 mm. longis intus tomentosis.—Brazil: Borba, Rio Madeira, civ. Amazonas, silva non inundabili, November 8, 1935, *A. Ducke* 35053 (type in Herb. Field Mus.).

Doubtless related to *S. spicata* Hook. f. of the Amazon Valley, which has relatively shorter and much broader leaves, and normally a much more elongate inflorescence. The somewhat similar *S. longifolia* (Spruce) Hook. f. has obtuse leaves and a simply spicate inflorescence. The type of *S. longifolia* is well matched by the following collection: Rio Negro superior, civ. Amazonas, ad ripas sabulosas infra Marituba, a shrub with white flowers, March, 1936, *Ducke* 35051.

Stachyarrhena Duckei Standl., sp. nov.—Arbor parva omnino glabra, ramulis gracilibus subteretibus in sicco fusco-ferrugineis, internodiis 1.5–4.5 cm. longis; vagina stipularis truncata annuliformis vix ultra 1 mm. alta; folia majuscula petiolata subcoriacea, petiolo crassiusculo 1.5–2 cm. longo; lamina lanceolato-oblonga 15–19 cm. longa 6–8 cm. lata sensim longiacuminata, basi acuta, supra in sicco fusco-brunnescens sublucida, costa prominente, nervis manifestis sed vix elevatis, subtus fere concolor, costa prominente, nervis lateralibus utroque latere ca. 12 angulo latiusculo abeuntibus tenerrimis prominentibus subarcuatis prope marginem arcuato-conjunctis, venulis vix prominulis laxe reticulatis; inflorescentia terminalis erecta 2.5 cm. longe pedunculata simpliciter spicata 5.5 cm. longa 1 cm. lata sat dense multiflora, floribus arcte sessilibus; calyx latissime campanulatus 3 mm. latus vix 2 mm. altus truncatus lucidus; corolla alba in alabastro 5.5 mm. longa obtusissima.—Brazil: Santa Izabel, Rio Negro, civ. Amazonas, ad ripas inundabiles, December 9, 1936, *A. Ducke* 35052 (type in Herb. Field Mus.).

Although similar to *S. acuminata*, this differs in having a strictly simple inflorescence, and its leaves also are relatively broader, besides being widest near the base rather than at the middle. The leaves are longer and much more acuminate than those of *S. spicata*.

Stachyarrhena reflexa Standl., sp. nov.—Frutex 4-metralis omnino glaber, ramis crassiusculis ochraceis vel fulvo-cinereis aliquanto nodosis, internodiis plerumque abbreviatis; vagina stipularis ca. 4 mm. longa coriacea breviter lobata, lobis apice rotundatis; folia petiolata coriacea rigida, petiolo crasso 1–1.5 cm. longo; lamina anguste oblonga 6–14 cm. longa 2.5–3.8 cm. lata obtusa, basi angustato-acuta, supra in sicco fusca lucida, costa nervisque prominulis, subtus brunnescens sublucida, costa gracili elevata, nervis lateralibus utroque latere ca. 13 tenerrimis vix prominulis angulo lato abeuntibus, venis fere obsoletis; inflorescentia simpliciter spicata ca. 3 cm. longa et 5 cm. longe pedunculata, abrupte reflexa, floribus in verticillis densis multifloris remotis aggregatis arcte sessilibus; calyx late campanulatus truncatus lucidus ca. 5 mm. latus et 3 mm. altus; corolla in alabastro 6–7 mm. longa apice obtusa.—Brazil: Capoeira, Fazenda São Bento-Merces de Diamantina, Municipio Diamantina, Minas Geraes, November 24, 1937, *H. Mello Barreto* 10012 (Herb. Jard. Bot. Bello Horizonte 22237; type in Herb. Field Mus.).

Because of its reflexed and pendent inflorescence, this evidently is related to *S. penduliflora* Schum., of Pará. The plant of that rather remote region, however, has leaves twice as broad, and mostly very obtuse or rounded at the base.

VALERIANACEAE

Valeriana cacalioides Standl., sp. nov.—Herba elata simplex ca. 90 cm. alta, caule 7–8 mm. crasso aliquanto fistuloso in sicco brunnescente et marmorato-maculato, internodiis usque 18 cm. longis glabris vel apicem caulis versus sparse breviter hirsutulis; folia ca. 4-juga longipetiolata membranacea in sicco fusca, petiolo 1.5–6 cm. longo vel in foliis supremis fere nullo sparse breviter pilosulo; lamina late rotundato-ovata vel fere hastato-reniformis 5.5–7.5 cm. longa 5–8.5 cm. lata acuta, basi profunde aperte cordata, prope basin hastato-angulata, aliter grosse sinuato-dentata vel sublobata, sparse praesertim prope basin breviter pilosa vel fere glabra, basi palmatim ca. 7-nervia; inflorescentia terminalis longipedunculata e cymis 2 capituliformibus dense multifloris ca. 2 cm. latis 2 cm. longe pedunculatis composita, ramis dense pilosis, bracteis foliaceis linearibus usque 5–6 mm. longis; corolla glabra fere 5 mm. longa, lobis subpatentibus late oblongo-ovatis obtusissimis tubo duplo vel triplo brevioribus; stamina longiexserta.—Mexico: Mount Ovando, Chiapas, April 12, 1937, *E. Matuda* 1812 (type in Herb. Field Mus.).

The large, broad leaves are a distinctive character of the plant, reminding one somewhat by their form of those of *Ipomoea Batatas* or of some other members of the Convolvulaceae.

COMPOSITAE

Actinea ursina Standl., sp. nov.—Herba perennis caulescens pauciramosa ca. 30 cm. alta erecta, caulibus pluribus gracilibus capitulis ca. 3 terminatis sat dense et laxissime albido-lanatis, internodiis foliis longioribus; folia integra, basalia ca. 6 cm. longa, 6–7 mm. lata lineari-oblanceolata apice anguste rotundata vel obtusa, basin versus longe sensimque attenuata et in petiolum marginatum decurrentia, utrinque pilis laxis longis lanata; folia caulina linearia sessilia vel subsessilia 2.5–6 cm. longa 2–3 mm. lata laxe lanata; pedunculi graciles usque 17 cm. longi laxe denseque lanati; capitula majuscula, disco 1.5 cm. lato fere 1 cm. alto, involucro dense pilis longis albis lanato, phyllariis obtusis; radii lutei ca. 1 cm. longi et 3 mm. lati, apice breviter tridentati, extus glanduloso-pilosuli.—Mexico: State of Nuevo León, scattered on drier, more open slopes, Las Canoas, on Cerro Potosí, Municipio de Galeana, July 17, 1935, *C. H. Mueller* 2189 (type in Herb. Field Mus.).

As this group of plants is treated by Rydberg (N. Amer. Fl. 34: 101. 1915), under the generic name *Tetraneuris*, this seems to be related to *Tetraneuris formosa* Greene and *T. Ivesiana* Greene, of the southwestern United States, but it is distinct from those and their relatives by its abnormally long and lax, copious pubescence.

Erigeron chiriquensis Standl., sp. nov.—Herba erecta ramosa elata 20–50 cm. alta, caule superne pauciramoso crassiusculo subtereti sparsissime pilis brevibus albidis strigoso vel glabrato, internodiis foliis brevioribus; folia numerosa sessilia 2–3 cm. longa 4–8 mm. lata acuta, inferiora pinnatilobata, segmentis lateralibus paucis oblongis acutis, superiora grosse pauciserrata, suprema integra vel breviter serrata et saepe linearia, basin versus integra et sensim angustata, sparse utrinque albido-strigosa, crasse membranacea; capitula terminalia solitaria vel aggregata breviter pedunculata, disco ca. 12 mm. lato et 6 mm. alto, pedunculis apice dense strigosis; phyllaria ca. 6 mm. longa subaequalia linearia longiattenuata hirsutula pallido-marginata; radii albi vel pallide caerulescentes numerosi anguste lineares 3–4 mm. longi; corolla filiformis glabra usque 7 mm. longa; achaenia paullo ultra 1 mm. longa sparse hispidula, pappi setis paucis 3.5 mm. longis albis minutissime scaberulis.—Panama: Potrero Mulato, Volcán de Chiriquí, Boquete

District, Prov. Chiriquí, alt. 3,140 meters, July 18, 1938, *Mrs. M. E. Davidson* 872 (type in Herb. Field Mus.).

Erigeron potosinus Standl., sp. nov.—Herba perennis erecta elata 30 cm. alta vel paullo ultra, caulibus subsimplicibus capitulis 2 longipedunculatis terminatis minute sparse puberulis et sparse hispidulo-pilosis paucifoliatis, internodiis saepe foliis longioribus; folia basalia 6–7 cm. longa petiolata, petiolo marginato, lamina oblongo-oblanceolata usque 4.5 cm. longa et 1.5 cm. lata integra apice rotundata fere glabra sed saltem subtus sparse puberula; folia caulina ca. 8 subaequalia, superiora paullo minora, oblonga vel lanceolato-oblonga acuta vel obtusa, basi sessilia et subamplexicaulia, integra, fere glabra ciliata; pedunculi graciles 9–15 cm. longi viscido-puberuli et patule pilosi; capitula majuscula, disco ca. 1.5 cm. lato et 7–8 mm. alto, phyllariis linearibus subaequalibus, exterioribus viridibus dense minuteque glanduloso-puberulis longiattenuatis erectis et subadpressis numerosissimis; radii albi purpureo tincti anguste lineares usque 1.5 cm. longi; achaenia juvenilia ochracea 1.5 mm. longa sparse puberula, pappi setis paucis duplo longioribus albis mollibus.—Mexico: State of Nuevo León, abundant on forest floor, Las Canoas, on Cerro Potosí, Municipio de Galeana, July 16, 1935, *C. H. Mueller* 2174 (type in Herb. Field Mus.). Below timber line, near peak of Cerro Potosí, alt. 3,450 meters, July 20, 1938, *Richard A. Schneider* 945.

Regarding the second collection cited, Mr. Schneider has made the following notes: "Abundant on open mountain side; spreading by offshoots; rays white or pale pink. A pretty daisy of open, rather rocky woods, and of open mountain slopes. Usually only one head to a stem. Just coming into bloom July 20, while the other *Erigeron* of this altitude was in full bloom when first observed on July 1."

Helenium pinetorum Standl., sp. nov.—Herba perennis robusta usque 60 cm. alta, caule vulgo tricephalo simplici inferne 1 cm. crasso striato glabro vel sparsissime lanato, internodiis foliis multo brevioribus; folia caulina numerosa sessilia, inferiora et media anguste oblanceolata usque 14 cm. longa 1.7–2.5 cm. lata attenuato-acuta, basin versus sensim angustata glabra vel glabrata parallelinervia; folia superiora lanceolata vel anguste ovata 3.5–8 cm. longa 1.5–2.5 cm. lata longiacuminata, basi dilatata et obtusa vel rotundata, fere glabra vel primo sparse lanata, integra; pedunculi crassi 3.5–7 cm. longi dense lanati; capitula magna, disco ca. 2 cm. lato et 1.2 cm. alto, phyllariis numerosis lineari-lanceolatis viridibus longiattenuatis herbaceis dense lanatis laxis; radii lineares 2.5 cm. longi intense lutei; pappi squamellae lineari-lanceolatae 3.5 mm. longae subulato-attenuatae.—Mexico: State of Nuevo León, Sierra Madre Oriental, ascent of Sierra Potosí by north hogback, about 20 miles northeast of Galeana, abundant in the upper pine forest, alt. 3,390 meters, July 26, 1934, *C. H. & M. T. Mueller* 1258 (type in Herb. Field Mus.). Peak of Cerro Potosí, abundant in upper pine woods, north side, in loose clumps of 4–10 plants, July 21, 1935, *C. H. Mueller* 2274.

The type collection was distributed as *Helenium integrifolium* (HBK.) Benth. & Hook., the only similar species, which was described from the State of Hidalgo, and grows in the mountains of Guatemala as well as on the high peaks of southern Mexico. In *H. integrifolium*, as indicated by ample material at hand for study and by the original illustration of Kunth, the plant is densely lanate throughout, and the upper cauline leaves are all narrow, almost linear, or else divided into narrow lobes. In *H. pinetorum* all the leaves are entire, and the upper ones are broad, especially at the base.

Senecio Austin-Smithii Standl., sp. nov.—Frutex epiphyticus 1.5 m. longus, ramis dense foliatis ochraceis subteretibus glabris, novellis in sicco fuscis, internodiis abbreviatis; folia inter minora petiolata in sicco subcoriacea et fusca, petiolo gracili 8–10 mm. longo; lamina anguste oblanceolato-oblonga 4–7.5 cm. longa 1.7–2.5 cm. lata apice obtusa vel anguste rotundata, basin versus cuneato-attenuata, integra glabra; inflorescentia terminalis cymoso-corymbosa 5 cm. longa et aequilata, pedicellis usque 4 mm. longis sparse araneoso-lanuginosis vel fere glabris; capitula numerosa condensata eradiata anguste campanulata; phyllaria ca. 7 et 5 mm. longa anguste oblonga obtusissima pallido-marginata glabra vel basi tantum obscure lanuginosa, bracteolis paucis brevibus; corollae 4–5 mm. longae glabrae; achaenia immatura glabra, pappi setis longis albis mollibus.—Costa Rica: Palmira, Prov. Alajuela, alt. 1,860 meters, February 9, 1938, *Austin Smith* H299 (type in Herb. Field Mus.).

"An epiphyte with woody stems 1.5 meters long, on forest tree in semi-shade; bark smooth and pale brown; leaves a little thickened, flexible, glabrous and shining; inflorescence green."

Solidago Muelleri Standl., sp. nov.—Herba perennis elata ca. 70 cm. alta ut videtur simplex, caule dense foliato gracillimo cinereo-puberulo, internodiis foliis multo brevioribus; folia lanceolato-linearia 4–9 cm. longa 3–9 mm. lata longe angusteque attenuata, basin versus longe angusteque attenuata et plus minusve petiolata, remote minute adpresso-serrata, vel superiora interdum integra, 1-nervia vel obscure trinervia, supra in sicco griseo-viridia sparse puberula vel fere glabra, subtus praesertim ad costam gracilem prominentem minute pilosula; capitula numerosa parva secunda in racemos breves terminales et axillares 2-3 cm. longos disposita, inflorescentia tota anguste paniculata foliata 15 cm. longa basi 3.5 cm. lata, pedicellis tenuibus ad 3 mm. longis adpresso-pilosulis; capitula 3 mm. alta campanulata, phyllariis inaequalibus late linearibus obtusis adpressis stramineis apice ciliatis, dorso glabris; achaenia 1.3 mm. longa minute hispidula, pappi setis albis rigidulis ca. 2 mm. longis; radii pallide lutei fere lineares floribus disci vix longioribus.—Mexico: State of Nuevo León, common in moist crevices on river bank, Cañón Marisio Abajo, Rancho Las Adjuntas, Municipio de Villa Santiago, June 27, 1935, *C. H. Mueller* 2062 (type in Herb. Field Mus.).

STUDIES OF AMERICAN PLANTS—XI

BY

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STUDIES OF AMERICAN PLANTS—XI

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Perhaps the most important of the plants discussed on the following pages are new species obtained by Dr. Julian A. Steyermark, Assistant Curator of the Herbarium of Field Museum, during the Stanley Field Expedition of 1939–40 to Guatemala. This expedition, designed to obtain material for the *Flora of Guatemala*, now in course of preparation by Dr. Steyermark and the writer, was exceptionally successful in discovering plants new to the Guatemalan flora, including numerous new species. Those described here are only a few of the most striking and easily recognized ones, from a small portion of the total collection.

Another series that has yielded a surprising number of new plants is one made during the early months of 1940 by Mr. and Mrs. R. A. Terry in the Province of Darién, Panama. That portion of Panama is almost unknown botanically, and it is therefore not surprising that the Terry collection contains numerous new species, besides genera and other species new to the North American flora.

About half of the paper consists of descriptions of new Rubiaceae or of notes upon species previously published. Large quantities of material of this family have been received for critical determination, and it has seemed preferable to publish without further delay reports upon some of the more interesting elements of these collections.

There are included in the present paper descriptions of several new species detected by Dr. Steyermark, and included here at his suggestion.

DIOSCOREACEAE

Dioscorea Aguilarii Standl. & Steyerm., sp. nov.—Herbacea volubilis, caulibus elongatis gracillimis glabris vel breviter patulo-pilosis; folia modica longipetiolata membranacea, petiolo gracili 2–3.5 cm. longo breviter patule piloso; lamina hastato-lobata 4.5–8.5 cm. longa basi 2.5 cm. lata, supra glabra, subtus densiuscule pilis albis patulis hirsuta, lobo medio anguste lanceolato-oblongo basi 1.4–2.2 cm. lato longe angusteque attenuato trinervio, lobis posticis usque 2 cm. altis rectangule divergentis subquadratis, angulis rotundatis, lateribus exterioribus subtruncatis vel late concavis, binerviis; spicae masculae elongatae gracillimae tortuosae geminatae

longipedunculatae, parte florifera 2–5 cm. longa, rhachi patule pilosa, floribus in spiculas pluri- vel multifloras sessiles usque 7 mm. longas densas aggregatis; perianthii segmenta vix 1 mm. longa ovalia obtusa glabra; stamina 6, filamentis brevissimis.—Guatemala: Dept. Guatemala, in 1939, *Ignacio Aguilar* 90 (type in Herb. Field Mus.).

The foliage is distinctive because of the hastate and copiously pubescent blades. The basal lobes are almost square in general outline, but on the outer side, between the rounded corners, they are somewhat concave.

Dioscorea Vargasii Standl., sp. nov.—Herba gracillima volubilis, caule viridi glabro valde elongato, internodiis solemniter elongatis; folia alterna parva petiolata membranacea, petiolo gracili 8–12 mm. longo glabro vel sparse papilloso-scabro; lamina lanceolato-oblongo-cordata 4–6.5 cm. longa 1.2–1.8 cm. lata apicem acutum vel subulato-acutum versus paullo angustata, basi profunde (usque 1.5 cm.) cordata, sinu angusto saepe clauso, lobis posticis retrorsis vel paullo introrsis rotundatis, e basi 7-nervia, supra viridis glabra, subtus paullo pallidior ad nervos sparse papilloso-scabra, aliter glabra, nervis prominentibus apicem attingentibus vel exterioribus in marginem desinentibus; flores parvi virides racemosi, racemis laxe paucifloris graciliter breviterque pedunculatis, pedunculo incluso 2–3 cm. longis fere 1 cm. latis glabris, pedicellis filiformibus 2.5–4 mm. longis, bracteis parvis hyalinis vel viridescentibus; perianthium 2 mm. longum vel paullo ultra, segmentis oblongis obtusis patulis; stamina 3, filamentis brevissimis.—Peru: Hacienda Urco, Prov. Calca, Dept. Cuzco, alt. 2,960 meters, January, 1938, *César Vargas C.* 691 (type in Herb. Field Mus.).

The species is notable for the small and unusually narrow leaves, very deeply and narrowly cordate at the base. It is a pleasure to name it for Dr. Vargas, who has collected an extensive series of handsomely prepared specimens in various parts of Peru, but particularly in the Department of Cuzco.

MARANTACEAE

Calathea macrochlamys Woodson & Standl., sp. nov.—Herba elata ca. metralis ut videtur simplex, caule 1-foliato tereti 7–15 cm. crasso sparse pilis albidis laxis brevibus subadpressis piloso, ad nodum apicalem dense sericeo; folium caulem terminans magnum longipetiolatum papyraceum, petiolo 28–38 cm. longo sparse laxeque subadpresso-piloso vel fere glabro 8.5–11 cm. longe vaginato, vagina basi ca. 2 cm. lata sursum sensim attenuata, ligula brevissima, petiolo 5–6 cm. infra basin laminae geniculato, nodo tereti laevi lucido aliquanto indurato petiolo vix crassiore; lamina ovalis vel late oblonga in sicco pallide viridis ca. 50 cm. longa et 18–20 cm. lata vel major, apice rotundata et breviter acuminato-apicata, basi subrotundata et subito contracta, fere concolor, glabra vel glabrata, costa gracili subtus elevata, nervis tenerrimis numerosissimis subtus prominulis leviter arcuatis; inflorescentia terminalis e basi petioli nascens basi bracteata breviter pedunculata vel subsessilis, primo 5–6 cm. longa et 3–4 cm. lata, post anthesin recurvata et elongata, dense pauciramosa et subpaniculata; bractea basalis lanceolato-oblonga 5.5–11 cm. longa longiattenuata inflorescentiae adpressa, bracteis interioribus numerosis oblongis vel ovato-oblongis 12–20 mm. longis in sicco stramineis striatis sparse sericeo-pilosis vel fere glabris, floribus breviter pedicellatis; sepala subaequalia latiuscule ovato-oblonga obtusa vel acutiuscula ca. 11 mm. longa et 3.5 mm. lata, basi infima tantum coalita, basi minute puberula, aliter glabra; ovarium suboblongum 2 mm. longum glabrum 3-loculare; petala 3; staminodia nulla(?).—Mexico: Tenosique, Tabasco, June 14–16, 1939, *E. Matuda* 3399 (type in Herb. Field Mus.; duplicate in Herb. Mo. Bot. Gard.). Uvero, Oaxaca, 30–90 meters, common along roadsides in cut-over forest land, May, 1937, *Llewelyn Williams* 9324 (Herb. Field Mus.).

The vernacular name is reported by Williams as Pozolillo. In gross appearance the present plant is very unlike any of the numerous species of *Calathea* that form so prominent a part of the vegetation in the humid lowlands of southern Mexico and Central America. All of them have a simple inflorescence subtended by imbricate and usually very broad bracts, while in *C. macrochlamys* the inflorescence is lobate and branched, and all the bracts are comparatively narrow, not closely imbricate. The Mexican plant is closely related to *C. lateralis* (R. & P.) Lindl., of Peru and Colombia, represented in the Herbarium of Field Museum by a photograph of the Ruiz and Pavón type, from Cochero, Peru, and by *Lehmann* 5297 from the Andes of Popayán, Colombia. The differences observable between the South American and Mexican plants, while individually not conspicuous, when considered together are so numerous that it seems certain that the northern plant is specifically distinct.

PIPERACEAE

Piper canaense Standl., sp. nov.—Frutex 1–1.5 m. altus, ramulis ca. 4 mm. crassis striatis glabris nodosis, internodiis superioribus elongatis; folia magna breviter petiolata in sicco papyracea, petiolo crasso 15–20+5 mm. longo glabro; lamina lanceolato-oblonga 23–32 cm. longa 8–12.5 cm. lata longiuscule attenuato-acuminata, bas valde inaequilatera uno latere rotundata, altero subcordata, glabra, supra in sicco fusca sublucida, costa nervisque manifestis sed fere planis, venis prominulis laxe reticulatis, subtus pallidior ubique nigro-punctata aliquanto lucida, costa gracili prominente striata, nervis lateralibus uno latere 5, altero 4, valde obliquis teneris angulo angusto adscendentibus arcuato-junctis, venis prominulis laxe reticulatis; spicae graciles solitariae graciliter ca. 2 cm. longe pedunculatae in statu fructifero 12–13 cm. longae 4–6 mm. crassae; baccae globosae glabrae vix 2 mm. longae apice rotundatae vel subdepressae, stigmatibus brevibus.—Panama: Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 10, 1940, *M. E. & R. A. Terry* 1461 (type in Herb. Field Mus.).

An apparently well marked species, quite unlike any other Central American one examined, noteworthy for the unusually large leaves which are somewhat bicolorous, and markedly asymmetric at the base.

Piper cuasianum Standl., sp. nov.—Frutex 1–1.5 m. altus, ramis gracilibus striato-costatis fuscis sat dense longivillosis, internodiis 4.5–5 cm. longis, nodis paullo incrassatis; folia modica brevissime petiolata herbacea, petiolo ca. 5–6+7–10 mm. longo longivilloso; lamina aliquanto asymmetrica lanceolato-oblonga 14–19 cm. longa 5–8 cm. lata longe angusteque acuminata, basi valde inaequilatera utroque latere anguste rotundata vel subtruncata, lamina basin versus paullo angustata, supra in sicco fusca sparse villosa, subtus pallidior brunnescens dense minute puncticulata subsparse pilis longis patulis sordide brunneis villosa, pinnatinervia, costa gracili prominente, nervis lateralibus utroque latere supra basin 4 teneris omnibus e medio inferiore laminae nascentibus angulo semirecto vel angustiore adscendentibus subarcuatis versus apicem laminae arcuato-junctis, venis prominulis laxe reticulatis; pedunculi solitarii graciles 4 cm. longi longivillosi; spicae 4.5 cm. longae 5 mm. latae apice angustatae.—Panama: Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 12, 1940, *M. E. & R. A. Terry* 1531 (type in Herb. Field Mus.).

A plant of distinctive appearance because of the rather large leaves with abundant pubescence of long, soft, dirty brown hairs, and the long-stalked, short and broad spikes.

Piper Terryae Standl., sp. nov.—Frutex 60–120 cm. altus, ramulis crassiusculis dense hirsuto-villosis, internodiis ut videtur brevibus; folia magna breviter petiolata tenuiter membranacea, petiolo crasso usque 12 mm. longo dense villoso; lamina obovata 18–23 cm. longa 7.5–13 cm. lata obtusa vel acutata, basin versus arcuato-cuneatim angustata, basi ipsa late cuneata et breviter cordata, supra in sicco fusca densiuscule pilis usque 3 mm. longis laxis pallidis patentibus villosa, subtus paullo pallidior similiter villosa dense minuteque papillosa pinnatinervia, nervis lateralibus utroque latere 4 tenerrimis obliquis angulo semirecto adscendentibus omnibus prope medium arcuato-junctis, venis paucis prominentibus laxe reticulatis; pedunculi solitarii ca. 3.5 cm. longi graciles brunneo-papillosi dense pilis longis patulis pallidis villosi; spicae anguste oblongae 3.5 cm. longae 8 mm. latae apice rotundatae; baccae sessiles globosae glabrae, stigmatibus brevissimis. Panama: Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 10, 1940, *M. E. & R. A. Terry* 1459 (type in Herb. Field Mus.).

No Central American *Piper* at all similar to this has been noted. It is striking in appearance because of the combination of abundant, long pubescence, large, very thin leaves, narrowly and shallowly cordate at the base, and short, broad spikes, borne on long and slender peduncles.

MORACEAE

Ficus caballina Standl. Field Mus. Bot. 13: 301. 1937.—A species of singular appearance because of its large, greatly elongate, narrow, almost sessile leaves, based upon one collection from the Department of Loreto, Peru. It has been found recently in Bolivia: Dept. La Paz, Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750–900 meters, a tree of 9 meters, July, 1939, *B. A. Krukoff* 10432.

Ficus Killipii Standl. Field Mus. Bot. 13: 304. 1937.—Described from the departments of Junín and Ayacucho, Peru. Recently collected specimens from the eastern lowlands of the Department of La Paz, Bolivia are conspecific: Prov. S. Yungas, basin of Río Bopi, Asunta, near Evenay, 690–750 meters, July, 1939, *B. A. Krukoff* 10641, 10603; a tree of 22–36 meters. Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750–900 meters, July, 1939, *Krukoff* 10335; a tree of 15 meters.

Ficus Macbridei Standl. Field Mus. Bot. 13: 305. 1937.—A species based upon *Macbride* 5090 from the Department of Huánuco, Peru. It may now be reported from Bolivia: Dept. La Paz,

Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750–900 meters, July, 1939, a tree of 12 meters, *B. A. Krukoff* 10534.

Ficus regularis Standl. Bot. Ser. Field Mus. 17: 175. 1937.—All the material thus far known of this species has been collected by Mr. B. A. Krukoff, who obtained the original collections in Amazonas and the Territory of Acre, Brazil. He has found it recently also in Bolivia: Dept. La Paz, Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750–900 meters, July, 1939, a tree of 13–30 meters, *Krukoff* 10524, 10523.

Poulsenia armata (Miq.) Standl. Trop. Woods 33: 4. 1933.—For a discussion of the synonymy and distribution of this monotypic genus, see the notes in the publication cited. In South America the tree has been known heretofore from the Santa Marta region of Colombia, and from the lowland coastal forests of El Recreo, Ecuador. The following collection indicates that its range is much wider, and extends to a region in which it would scarcely have been expected in view of its previously recorded range: Bolivia: Dept. La Paz, Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750–900 meters, July, 1939, *B. A. Krukoff* 10282. Described by the collector as a tree of 22 meters.

POLYGONACEAE

Coccoloba Steyermarkii Standl., sp. nov.—Arbor, ramulis teretibus striatis ochraceis glabris, internodiis plerumque brevibus; ochreae ca. 9 mm. longae minute puberulae brunneae cito deciduae; folia modica breviter petiolata coriacea, petiolo crassiusculo usque 1.5 cm. longo glabro; lamina angustissime lanceolato-oblonga 14–19.5 cm. longa 4–5 cm. lata glabra longe angusteque attenuato-acuminata, apice ipso obtuso, basi obtusa vel anguste rotundata, supra in sicco sublucida pallida densiuscule fusco-punctata, costa prominula, nervis venisque prominulis et arcte reticulatis, subtus pallidior, minute puncticulata, costa gracili elevata, nervis lateralibus utroque latere ca. 14 tenerrimis inconspicuis angulo lato abeuntibus aliquanto irregularibus juxta marginem junctis, venulis vix prominulis arcte reticulatis; spicae terminales vel axillares solitariae vel geminatae fere sessiles 4.5–8 cm. longae ca. 8 mm. latae subdense multiflorae, rhachi crassiuscula dense puberula, ochreolis puberulis ca. 1.5 mm. altis, pedicellis crassis puberulis ochreolis duplo longioribus; perianthium glabrum 2.5 mm. longum, segmentis basi breviter connatis ovalibus apice rotundatis minutissime puncticulatis; antherae subglobosae breviter exsertae.—Guatemala: Dept. Izabal, Río Dulce, 2–4 miles west of Livingston, on south side (left-hand side going up the river), at sea level, April 16, 1940, *Julian A. Steyermark* 39533 (type in Herb. Field Mus.).

The flowers are described as whitish green. The species is remarkable for its narrow leaves, more elongate and narrower than those of any other Central American species, except *C. acuminata* HBK., to which it is not closely related. It is similar to *C. escuintlensis* Lundell, of the Pacific slope of Guatemala and of Chiapas, but that has broader leaves, almost concolorous and with much fewer nerves.

NYCTAGINACEAE

Neea mapirensis Standl. Field Mus. Bot. 11: 78. 1931.—When described, this species was based upon a single collection, *Buchtien* 1993 from San Antonio, near Mapiri, Bolivia. The following additional collections are now available from Bolivia: Dept. La Paz, Prov. Larecaja, Copacabana, about 10 km. south of Mapiri, alt. 850–950 meters, October-November, 1939, *B. A. Krukoff* 11383. Tuiri, near Mapiri, left bank of Río Mapiri, Prov. Larecaja, alt. 490–750 meters, September, 1939, *Krukoff* 10838. The species is an unusually well marked one, for this genus, because of its large leaves, copiously pubescent on the lower surface.

Salpianthus Standleyi Steyermark, sp. nov.—Frutex divaricatus 1.75 m. altus; ramulis geniculatis viridibus rubro-striatis glabris vel apicibus minute puberulis; foliis alternis, ovato-ellipticis, 2–9 cm. longis, 1–3.3 cm. latis, concoloribus, acutis, glabris, basi abrupte et acute attenuatis, subpetiolatis, triplinerviis, latioribus quam longis; inflorescentia cymoso-paniculata densa, 1–3 cm. longa, cymis densis, 1.5–8 cm. latis, ramulis minute puberulis; floribus 3.5–4 mm. longis, breve pedicellatis, hirsutulis, lobis albis, deltoideo-ovatis, extus hirsutulis, intus glabris, tubo perianthii cylindrico-infundibuliformi, viridi, 3 mm. longo, 1.5–1.75 mm. lato, extus hirsutulo; semine fusco-nigro.—Mexico: Guerrero, Barranca del Consuelo, above stream in open, Sierra Madre del Sur, north of Río Balsas, Distrito Adama, November 11, 1937, *Ynes Mexia* 8783 (type in Herb. Field Mus.).

In the strongly flexuose mode of branching of the stems, *Salpianthus Standleyi* simulates *S. aequalis* Standl. It differs from *S. aequalis*, however, in its broader, densely paniculate-cymose inflorescence, smaller perianth, mostly glabrous stems, more shortly pedicellate flowers, and glabrous leaves.

BERBERIDACEAE

Berberis Johnstonii Standl. & Steyerm., sp. nov.—Frutex 2–2.5 m. altus glaber, ramis crassis paucis teretibus rimosis ochraceis dense foliatis, internodiis abbreviatis; folia modica pinnata 2–6 cm. longe petiolata, petiolo rhachique gracilibus rigidis nudis; foliola 5–9, saepius 7, coriacea sessilia integra vel subundulata subaequalia plerumque elliptico-oblonga, interdum oblonga vel ovali-oblonga, plerumque 3–5 cm. longa et 1.5–2.5 cm. lata, apice rotundata vel obtusissima et interdum retusa, basi aliquanto asymmetrica late cuneata, supra in sicco cinereo-viridia lucida, nervis venisque pallidis prominulis, subtus pallidiora, costa tenera prominente, nervis venisque prominulis et arcte reticulatis, margine saepe plus minusve revoluto; inflorescentia ignota.—Guatemala: Parramos, Dept. Sacatepéquez, December 14, 1938, *J. R. Johnston* 1525 (type in Herb. Field Mus.). Damp thicket near Pastores, Dept. Sacatepéquez, alt. 1,600 meters, December 14, 1938, *Standley* 59895. Dry, rocky hills north of Santa Rosa, Dept. Baja Verapaz, in pine-oak forest, March 30, 1939, *Standley* 69801.

The first two collections actually are from the same locality and perhaps from the same plant. It belongs, of course, to the group *Mahonia*, treated as a genus by many authors. The only other Guatemalan species related to *Berberis Johnstonii* is one that has been passing as *Mahonia fascicularis* DC., a name that probably does not belong properly to the Central American shrub. The plant here described is known, unfortunately, only in a sterile state, but the foliage is so distinctive in its entire leaflets that there is little doubt that it represents a well differentiated species.

MAGNOLIACEAE

Talauma sambuensis Pittier, Contr. U. S. Nat. herb. 20: 105. 1918.—The species was based on *Pittier* 5681 from Boca de Pauarandó, Sambú River, Darién, Panama. Recently it has been re-collected in the same province: Cana–Cuasi trail, Camp 1, Chepigana District, alt. 240 meters, March, 1940, *M. E. & R. A. Terry* 1420. Described as a tree of 24–30 meters, with white flowers. The occurrence of a member of this family at or near sea level is unusual, so far as Central America is concerned. Other Central American species of *Talauma* and *Magnolia* grow normally in the higher mountains.

CAPPARIDACEAE

Capparis Steyermarkii Standl., sp. nov.—Frutex vel arbuscula, ramis crassiusculis subteretibus densissime pilis sessilibus stellatis brunneis velutino-tomentosis, internodiis brevibus; folia magna petiolata crasse membranacea, petiolo crasso 1.5–3.3 cm. longo densissime brunneo-stellato-tomentoso; lamina obovata vel oblongo-obovata 18–21.5 cm. longa 6–10.5 cm. lata apice lato abrupte acuminata vel longiacuminata, basin versus paullo cuneato-angustata, basi ipsa obtusa, supra primo stellato-tomentosa sed cito glabrata, costa nervisque prominulis, venis quoque prominulis et arcte reticulatis, subtus paullo pallidior ubique molliter stellato-pilosa, costa gracili elevata, nervis lateralibus utroque latere ca. 11 elevatis angulo latiusculo adscendentibus fere rectis prope marginem arcuato-conjunctis, venis prominentibus arctissime reticulatis; inflorescentiae axillares umbellato-racemosae vel simpliciter umbelliformes folia fere aequantes longissime pedunculatae cum pedunculo usque 13 cm. longae, ramis pedicellisque dense pilis mollibus fulvis vel brunnescentibus stellato-pilosis, pedicellis gracilibus usque 17 mm. longis, bracteis infimis usque 6 mm. longis, superioribus multo brevioribus; sepala 5–6 mm. longa linearia in alabastro sejuncta dense stellato-pilosa; petala alba late obovata sessilia 7–8 mm. longa apice rotundata extus dense pilis subadpressis stellato-pilosa; torus globoso-ovoideus 1.5 mm. altus puberulus, gynophoro ca. 7 mm. longo stellato-piloso, ovario lineari ca. 5 mm. longo; stamina 8, filamentis solemniter elongatis basi stellato-pilosis superne glabris, antheris lineari-oblongis glabris.—Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up river, on north side (right-hand side going up river), near sea level, April 14, 1940, *Julian A. Steyermark* 39387 (type in Herb. Field Mus.).

"Petals white, easily caducous. Leaves firmly chartaceous, dark, rich green above, pale green beneath and sulcate along the nerves. Rachis and young stems ferruginous." There is no obvious relationship between this plant and any other *Capparis* known from Central America. The abundant, soft, brownish, stellate pubescence of almost all parts is particularly distinctive.

CONNARACEAE

Pseudoconnarus Krukovii Steyermark, sp. nov.—Planta volubilis, ramulis teretiusculis glabris; foliis trifoliolatis, longipetiolatis, coriaceis; rhachi 7–11 cm. longa plerumque glabra vel minute puberula; foliolis basi triplinerviis, nervis lateralibus 4, supra nitidulis glabris reticulatis, subtus pallidis subglaucescentibus papillosis minute puberulis vel subglabratis, forte reticulatis; petiolulo crasso 4–7 mm. longo; foliolo terminali late ovato vel elliptico-ovato 10–15 cm. longo, 5–9 cm. lato, apice acuto, basi cuneato vel rotundato;

foliolis lateralibus similibus sed minoribus 6–10 cm. longis, 5–7 cm. latis; inflorescentia paniculata axillari pedunculata 8–15 cm. longa laxe multiramosa, ramis patenti-adscendentibus minute et parce velutinis vel subglabratis robustis, pedicellis robustis 4–10 mm. longis minute parce velutinis; floribus non visis, lobis calycis in fructu 2–2.5 mm. longis, 1.75–2.5 mm. latis minute ciliatis, extus minute parce velutinis vel subglabratis patenti-adscendentibus suborbiculato-oblongis obtusis; fructu 10–13 mm. longo glabro clavato apiculato.—Brazil: Amazonas, Municipality Humayta, near Tres Casas, September 14–October 11, 1934, *B. A. Krukoff* 6455 (type in Herb. Field Mus.; duplicate in Herb. N. Y. Bot. Gard.). Municipality Humayta, near Livramento, on Rio Livramento, October 12–November 6, 1934, *Krukoff* 6956, 6659.

Because its leaflets are strongly reticulated on the lower surface, this species of *Pseudoconnarus* is closely related to *P. reticulatus* Schellenberg, and to *P. subtriplinervis*. It differs, however, from *P. reticulatus* in its glabrous or nearly glabrous branches, petioles, and petiolules, and in the nearly glabrous lower surface of the leaflets. From *P. subtriplinervis* it differs in the shape of the leaflets, which are broadly elliptic-ovate and not elliptic, and in the nearly glabrous branches and foliage.

Rourea Krukovii Steyermark, sp. nov.—Frutex scandens, ramulis ferrugineo-velutinis vel subglabratis; foliis 7–9-foliolatis; rhachi robusta 8–13 mm. longa minute velutina; petiolulo crasso 4–6 mm. longo minute velutino; foliolis coriaceis revolutis elliptico-oblongis, 3.5–12 cm. longis, 2.5–6 cm. latis, apice acuminatis, basi rotundatis, supra glabris opacis reticulatis, subtus pallidis subglaucescentibus dense reticulatis sed non rugosis; inflorescentia paniculata terminali pedunculata 8–13 cm. longa dense ferrugineo-puberula, ramulis dense multifloris, pedicellis robustis 2–4 mm. longis, dense ferrugineo-puberulis, bracteis minutis ovato-lanceolatis ferrugineo-puberulis; floribus non visis; calyce in fructu 5.5–7 mm. longo, lobis 4–5 mm. longis, 2–3 mm. latis, oblongo-ovatis, intus parce puberulis, extus dense ferrugineo-velutinis, forte erecto-adpressis; fructu parce velutino oblongo obtuso basi substipitato 6–7 mm. longo.—Brazil: Amazonas, Municipality São Paulo de Olivença, near Palmares, September 11–October 26, 1936, *B. A. Krukoff* 8556 (type in Herb. Field Mus.; duplicate in Herb. N. Y. Bot. Gard.).

In the nonglandular, velutinous or tomentose calyx and fruit, *Rourea Krukovii* appears to be a member of the recently described section *Indutae* Schellenberg (Pflanzenreich IV. 127: 199. 1938).

It is well characterized by its revolute leaflets, calyx lobes appressed in fruit, ferruginous tomentum of peduncles and rhachis, and leaflets strongly reticulate and glaucescent on the lower surface.

LEGUMINOSAE

Bauhinia Killipiana Standl., sp. nov.—Frutex scandens ut videtur inermis, caule gracili dense pilis brunneis mollibus longis patulis piloso; stipulae falcato-semiovatae usque 8 mm. longae obtusae vel subacutae virides sparse pilosae palmatinerviae; folia majuscula biloba longipetiolata subcoriacea, petiolo gracili 4–5.5 cm. longo dense patenti-piloso; lamina ambitu rotundato-ovata 11–14.5 cm. longa 8.5–10 cm. lata fere ad medium biloba, basi profunde angusteque cordata, sinu 2.5–3.5 cm. alto fere clauso, e basi 13-nervia, lobis acutiusculis usque breviter acuminatis, supra lucida glabra, nervis prominentibus, venulis prominulis et arctissime reticulatis, subtus ubique dense molliterque pilosa, pilis plerumque patulis, nervis prominentibus gracilibus, venis prominentibus laxe reticulatis; flores racemosi, racemis terminalibus simplicibus laxe multifloris longipedunculatis recurvis ca. 8 cm. longis, rhachi dense pilis ferrugineis longipilosa, bracteis viridibus lanceolato-linearibus ca. 8 mm. longis ut videtur persistentibus, pedicellis gracilibus usque 7 mm. longis dense pilosis; flores in alabastris tantum visi, calycis tubo late ovoideo ca. 7 mm. longo et 5 mm. fere lato densissime pilis longis patentibus ferrugineis vestito, lobis lineari-lanceolatis viridibus erecto-incurvis 4–5 mm. longis acuminatis.—Peru: Juanjuí, Dept. San Martín, Alto Río Huallaga, alt. 400–800 meters, in forest, April, 1936, *G. Klug* 4289 (type in Herb. Field Mus.).

Bauhinia Klugii Standl., sp. nov.—Frutex scandens cirrhiferus ut videtur inermis, ramis crassiusculis subteretibus densissime pilis brevibus ferrugineis plerumque patulis tomentosis, internodiis brevibus; stipulae deciduae, non visae; folia modica breviter petiolata firme membranacea, petiolo 1–1.5 cm. longo dense ferrugineo-tomentoso; lamina 5–8 cm. longa 5–8 cm. lata ad tertiam partem biloba, basi truncata vel brevissime lateque subcordata, e basi 11-nervia, lobis paullo obliquis late ovatis obtusis vel breviter acutis, supra sublucida primo sparse pilis longiusculis laxis subadpressis pilosa, cito glabrata, venulis prominulis arctissime reticulatis, subtus pallidior, ubique, ad nervos densius, pilis brevibus subadpressis ferrugineis vel pallidioribus pilosa, venis prominentibus arcte reticulatis; flores racemosi, racemis terminalibus fasciculatis vel paniculatis pedunculatis sat dense pauci- vel multifloris usque ad 7 cm. longis, panicula interdum ad 12 cm. longa et 6.5 cm. lata pauciramosa, ramis oblique adscendentibus densissime ferrugineo-tomentosis, pedicellis crassiusculis ad 5 mm. longis, bracteis ferrugineis patentibus lineari-attenuatis ad 5 mm. longis; calyx 7–8 mm. longus late campanulatus basi acutiusculus extus dense pilis patulis vel subadpressis ferrugineis pilosus, in alabastro subrostratus, lobis paullo inaequalibus triangulari-ovatis tubo subaequalibus; petala glabra lata calyce fere duplo longiora; stamina fertilia 10; ovarium dense pilis longis subadpressis ferrugineis indutum. Peru: Mountain forest, Chazuta, Río Huallaga, Dept. San Martín, alt. 260 meters, a liana, the buds golden yellow, March, 1935, *G. Klug* 4027 (type in Herb. Field Mus.).

Brownea loretensis Standl., sp. nov.—Arbor 10-metralis, trunco ca. 15 cm. diam., ramulis gracilibus subteretibus fuscis elevato-lenticellatis, internodiis elongatis glabris vel glabratis; folia 8–14-foliolata majuscula breviter petiolata, petiolo 2–3.5 cm. longo basi incrassato, rhachi gracillima 8–18 cm. longa subtereti fusca glabra, foliolis alternis vel suboppositis, petiolulis ca. 3 mm. longis; foliola subcoriacea anguste oblonga vel lanceolato-oblonga, interdum oblanceolato-oblonga plerumque 7–11 cm. longa et 2–3 cm. lata longissime caudato-acuminata, acumine fere lineari usque 2.5 cm. longo, basi rotundata vel obtusissima, supra glabra lucida, nervis venisque prominulis, venulis arctissime prominulo-reticulatis, subtus paullo pallidiora ad costam teneram prominentem sparse hispidula vel fere omnino glabra, nervis irregularibus remote a margine conjunctis, venulis prominentibus arctissime reticulatis; inflorescentia terminalis breviter racemosa capituliformis, corollis inclusis ca. 9 cm. longa et 16 cm. lata, dense multiflora, rhachi 3.5 cm. longa dense fulvo-tomentosa; bracteae extimae parvae rotundatae dense sericeae, interiores obovato-spathulatae ad 4 cm. longae et 1.5 cm. latae obtusae dense ubique fulvo-tomentellae; bracteolae ca. 22 mm. longae ad medium connatae extus dense fulvo-tomentellae; calyx ca. 4.5 cm. longus extus glaber vel superne sparsissime pilosulus, segmentis spathulato-oblongis apice rotundatis; petala ca. 6.5 cm. longa coccinea rotundata et apiculata.—Peru: On rising ground, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, *José M. Schunke* 11 (type in Herb. Field Mus.).

Local name Paloicruz (palo de cruz?).

Galactia acuminata Steyermark, sp. nov.—Planta scandens, ramulis tenuibus parce pilis adpressis ferrugineis pubescentibus; foliis imparipinnatis, foliolis 3, lanceolatis vel anguste ellipticis apice acuminato-aristatis, basi acutis vel subacutis, foliis petiolis exclusis 5–7.5 cm. longis, 1.2–1.7 cm. latis, foliolo terminali longissimo, foliolis integris, supra praeter costam mediam parce pubescentem glabris, subtus strigilloso-pubescentibus, costa media dense strigilloso-pubescente, membranaceis, concoloribus, nervis lateralibus divaricatis non conspicuis, petiolo tenui, 4.5–5.5 mm. longo, parce strigilloso-pubescente, stipulis subulato-aristatis ca. 3 mm. longis, petiolulis lateralibus 2–2.5 mm. longis, basi bracteis subulatis 1.5 mm. longis fulcratis, petiolulo terminali longiore 8–9 mm. longo; floribus paucis, basi petioli subumbellatis, pedicellis tenuibus 4–6 mm. longis, retrorse strigilloso-pubescentibus; calyce tubuloso, 5-fido, strigilloso-pubescente, lobis 2 longioribus; corolla quam calyce longiore; ovario dense strigilloso-pubescente.—Mexico: Finca Juárez, Chiapas, August 12, 1937, *E. Matuda* 1741 (type in Herb. Field Mus.).

This new species of *Galactia* is readily distinguished from other members of the genus by its long-acuminate, membranaceous leaves which are narrowly elliptic or lanceolate, and sparsely strigillose-pubescent on the lower surface.

Pithecolobium chazutense Standl., sp. nov.—Arbor 15-metralis, ramulis crassis ferrugineo-puberulis; stipulae non visae; folia majuscula, petiolo nudo 3–4 cm. longo, rhachi 6–9 cm. longa subtereti ferrugineo-puberula vel breviter pilosula, glandulis solitariis inter paria pinnarum parvis incrassatis crateriformibus; pinnae 5-jugae 13–14 cm. longae, infimae duplo breviores; foliola usque 15-juga sessilia membranacea oblonga vel basi paullo latiora plerumque 2–2.5 cm. longa et 7–10 mm. lata, obtusissima vel rotundata et apiculata, basi oblique rotundata, supra in sicco lucida ad costam puberula, aliter glabra, venis non elevatis, subtus pallidiora glabra, costa paullo excentrica, nervis paucis remotis prominulis; flores dense capitati ochroleuci fere omnino glabri, capitulis globosis 3 cm. diam. solitariis vel paucifasciculatis, pedunculo gracili 6–8 cm. longo hirtello nudo, bracteis parvis inconspicuis; calyx late campanulatus vix ultra 1.5 mm. altus minute inaequaliter dentatus, dentibus late triangularibus obtusis minute glandulosis; corolla graciliter tubulosa 9 mm. longa, tubo sursum sensim dilatato et fauce 1.5 mm. lato, lobis triangulari-ovatis erectis vel patulis vix ultra 1 mm. longis acutiusculis; stamina numerosissima 5 mm. longe exserta.—Peru: In forest, Chazuta, Río Huallaga, Dept. San Martín, alt. about 260 meters, March, 1935, *G. Klug* 4011 (type in Herb. Field Mus.).

Pithecolobium martinianum Standl., sp. nov.—Arbuscula 3-metralis; folia magna subsessilia, pinnis 1-jugis 5-foliolatis paullo ultra 1 cm. longe petiolulatis, rhachi 7–8.5 cm. longa gracili glabra, glandulis solitariis inter paria foliolorum parvis disciformibus nigris, petiolulis crassis nigrescentibus 5 mm. longis; foliola majuscula crasse papyracea subaequalibus, inferioribus paullo minoribus, elliptico-oblonga vel oblanceolato-oblonga 9–15 cm. longa 4–6 cm. lata subabrupte acuminata, basi valde obliqua uno latere obtusa, altero anguste attenuata, glabra, supra sublucida, costa nervisque prominentibus, venis non elevatis, subtus paullo pallidiora brunnescentia, costa gracili elevata, nervis lateralibus utroque latere 3–5 teneris prominentibus arcuatis, venulis prominentibus arcte reticulatis; flores spicati, spicis laxe multifloris prope basin bifidis pedunculatis e nodis defoliatis ut videtur nascentibus 6–14 cm. longis, rhachi recta gracili sparse puberula, bracteis minutis subulatis, floribus arcte sessilibus; calyx tubulosus 2.5 mm. longus sparse puberulus sursum paullo dilatatus, dentibus late ovatis brevissimis acutis vel acuminatis; corolla sparse minutissime puberula striata 10–11 mm. lata, fauce paullo dilatata 2 mm. lata, lobis suberectis oblongis acutiusculis 2 mm. longis; stamina numerosissima ca. 2 cm. longe exserta, inferne in tubum breviter exsertum coalita.—Peru: In forest, Chazuta, Río Huallaga, Dept. San Martín, alt. about 260 meters, flowers lilac-rose, May, 1935, *G. Klug* 4149 (type in Herb. Field Mus.).

Vatairea Lundellii (Standl.) Standl., comb. nov. *Tipuana Lundellii* Standl. Carnegie Inst. Wash. Publ. 461: 65. 1935.—This tree is now known to occur in the forests of British Honduras, the Department of Petén, Guatemala, and the Isthmus of Tehuantepec, Oaxaca, Mexico.

RUTACEAE

Zanthoxylum Aguilarii Standl. & Steyerm., sp. nov.—Frutex vel arbor vulgo 4.5–9 m. alta inermis vel aculeis paucis brevibus rectis armata dense ramosa, ramis teretibus rimosis ochraceis usque fuscis, novellis sparse lepidotis vel fere glabris, internodiis brevibus; folia inter minora pinnata plerumque 5–12 cm. longa petiolata, petiolo supra profunde canaliculato superne marginato sed vix alato; foliola saepius 9–11 sessilia subcoriacea subaequalia vel inferiora sensim decrescentia oblonga usque anguste lanceolato-oblonga vel subelliptica 2.5–5.5 cm. longa 1–1.5 cm. lata, apicem obtusum vel emarginatum versus saepe angustata, rarius subacuta, basi obtusa et saepe valde obliqua, remote grosseque crenata vel saepius subintegra, margine prope basin folioli breviter recurvo, supra viridia glabra, costa impressa, subtus sparse brunneo-punctata, sparse praesertim ad costam nervosque puberula vel pilosula vel fere omnino

glabra; rhachis folii sparse hirtella anguste alata; inflorescentiae axillares vel quoque terminales parvae paniculatae foliis duplo vel triplo breviores dense multiflorae sessiles vel breviter pedunculatae, ramis sparse puberulis crassis, floribus tetrameris plerumque sessilibus et dense aggregatis; sepala minuta rotundo-ovata obtusa, petalis ovalibus obtusis ca. 2 mm. longis glabris ciliolatis; stylus crasse columnaris ovarium subaequans; folliculus 1 globosus basi et apice rotundatus ubique densissime longiuscule echinatus, echinis inclusis usque 1 cm. latus sed saepius aliquanto minor, bivalvis, valvis vulgo 6 mm. longis; semina globosa nigra lucidissima 3.5–4 mm. diam. laevia.—Guatemala: Damp thicket, barranco above Dueñas, Dept. Sacatepéquez, alt. 1,600–1,800 meters, common, January 21, 1939, *Paul C. Standley* 63209 (type in Herb. Field Mus.). Dept. Guatemala, 1938–39, *Ignacio Aguilar* 253, 244. Parramos, Dept. Sacatepéquez, December, 1938, *J. R. Johnston* 1512, 1546.

It is hard to believe that a plant so distinct as this, and apparently not uncommon in the central region of Guatemala that has been visited by most botanical collectors working in the country, should be without a name, but none has been found for it. The fruit is quite unlike that of other Central American or Mexican species. The foliage and inflorescence resemble those of *Z. Culantrillo* HBK., also a Guatemalan species.

The species is named for Don José Ignacio Aguilar G. of the Finca Nacional La Aurora, Guatemala, to whom the authors are indebted for many courtesies. He has presented to Field Museum a large series of plants from the Department of Guatemala, that will be of great service for use in the *Flora of Guatemala* now in preparation.

BURSERACEAE

Bursera Steyermarkii Standl., sp. nov.—Arbuscula, ramis crassis teretibus striatis ferrugineis glabris; folia trifoliolata longipetiolata crasse membranacea ad apices ramulorum brevium lateralium dense inserta, petiolo gracillimo 1.5–4 cm. longo sparse saltem superne patulo-piloso; foliola sessilia fere ad basin crenata supra sat dense pilis brevibus plerumque patulis pilosa, subtus dense pilis longiusculis patentibus velutino-pilosa, foliolo terminali rhombico-obovato usque cuneato-obovato vel oblanceolato-oblongo 4–6.5 cm. longo 2–3.5 cm. lato obtuso usque breviter acuminato, fere a medio usque ad basin sensim cuneato-attenuato, lateralibus paullo brevioribus basi asymmetrica obtusis vel acutis, costa nervisque utrinque prominentibus, venis subtus prominentibus et laxe reticulatis;

inflorescentiae laxissimae pauciflorae saepe folia fere aequantes, pedunculis gracillimis ut videtur pendulis usque 6 cm. longis vel ultra glabris, pedicellis teneris 1 cm. longis vel ultra; fructus glaber obovoideus 10–11 mm. longus et ca. 7 mm. latus basi obtusus apice acutiusculus lucidus.—Guatemala: Dept. Chiquimula, on plains or low slopes about Chiquimula, alt. 400 meters, October 20, 1939, *Julian A. Steyermark* 30068 (type in Herb. Field Mus.).

The genus *Bursera*, so abundantly represented almost throughout Mexico, has but few species in Central America, and these chiefly common and widely distributed ones. The species here described probably is a localized one, for it has not been noted elsewhere during recent rather extensive exploration of Guatemala. The only species that resembles it closely is the lately described *Bursera heteresthes* Bullock, of the Mexican states of Mexico and Guerrero. In foliage the two are almost exactly alike, but the fruit of *B. heteresthes* is strikingly different, being subglobose and only 5–6 mm. in length.

MALPIGHIACEAE

Mascagnia rivularis Morton & Standl., sp. nov.—Liana, ramulis teretibus 2.5 mm. crassis cinereis sericeis, lenticellis crebris ornatis; petioli ca. 12 mm. longi; lamina foliorum anguste oblonga 14.5 cm. longa 3.3–3.8 cm. lata integra, subcoriacea acuminata, basi cuneata, utrinque glaberrima, subtus pallidior, venis primariis ca. 8-jugis, supra obscuris, subtus prominulis, venis secundariis obscuris; inflorescentia axillaris paniculata 6–10 cm. longa ferrugineo-sericea foliis brevior, pedunculo communi 1.5–2 cm. longo, racemis secundariis nonnullis, 5–15-floris, pedunculis floriferis obsoletis (i.e. pedicellis basi articulatis), pedicellis 8–9 mm. longis gracilibus apice incrassatis ferrugineo-sericeis, basi bracteatis, bracteis minutis ovatis persistentibus 0.5–0.75 mm. longis sericeis; calyx eglanduliferus sericeus irregularis, lobis oblongis, plerisque ca. 1.75 mm. longis 0.9 mm. latis planis, lobis 1 vel 2 quam ceteris longioribus, 2.25 mm. longis, apice coloratis recurvatis; petala flava aequalia unguiculata (ca. 1 mm.), lamina oblonga ca. 4 mm. longa 2 mm. lata concava utrinque glabra membranacea, margine integro, eglandulifero; stamina 10 fertilia; filamenta gracillima aequalia ca. 3 mm. longa, vix 0.1 mm. lata, glabra; antherae oblongae ca. 1 mm. longae glabrae; ovarium pilosum; styli 3 aequales gracillimi glabri valde arcuati, stigmatibus terminalibus minutis paullo bilobis; samara (immatura) unica sericea, alis 2 lateralibus subflabellatis, crista dorsali prominente subintegra, alis intermediis nullis.—Type in the

Herbarium of Field Museum, collected along Río Dulce, Guatemala, March 27, 1939, *C. L. Wilson* 375.

This species is apparently an anomalous member of the section *Pleuropterys*. Distinctive are the very slender, basally articulate pedicels, the eglandular, irregular calyx, the glabrous petals, the actinomorphic androecium and gynoecium, the slender filaments, and slender, arcuate styles with minute stigmas.

VOCHYSIACEAE

Vochysia Braceliniae Standl., sp. nov.—Arbor 12-metralis, trunco erecto, coma parva rotundata, ramulis crassiusculis obtuse tetragonis ochraceis fere vel omnino glabris, internodiis elongatis; folia plerumque quaternata fere sessilia coriacea, petiolo crasso vix ultra 7 mm. longo; lamina late ovali-obovata 11-17 cm. longa 9-10 cm. lata, apice late rotundata vel truncata et subito apiculata, acumine obtuso ca. 7 mm. longo, basin versus paullo angustata, basi ipsa obtusa, supra in sicco lutescenti-viridis opaca glabra, costa nervisque plus minusve impressis, subtus fere concolor aliquanto brunnescens, in statu juvenili sparse praesertim ad nervos laxe sericea, aliter obscure minute puberula vel fere omnino glabra, costa crassa solemniter elevata, nervis lateralibus utroque latere ca. 21 fere rectis teneris valde elevatis angulo latiusculo adscendentibus prope marginem in nervum collectivum conjunctis, venulis prominulis arcte reticulatis; flores parvi laete lutei racemosi, racemis usque 16 cm. longis ca. 2 cm. latis paniculam terminalem densam basi foliatam 18-20 cm. longam efformantibus dense multifloris, rhachi sparse puberula vel fere glabra; sepala minora subrotundata, apice rotundata vel obtusissima, ciliata, postico calcarato, calcare obtuso ca. 5 mm. longo 1 mm. crasso vel paullo ultra; petalum anticum oblongum obtusum 1 cm. longum glabrum.—Peru: Dept. Loreto, near Yurimaguas, trail to San Ramón, in cut-over woods, alt. 180 meters, October 25, 1931, *Ynes Mexia* 6081 (type in Herb. Field Mus.).

Local name, Chambo caspi. "Wood soft and useless." Apparently a well marked species, notable for the very broad leaves whose prominent lateral nerves are rib-like, and united near the margin to form a distinct collective nerve. The species is named for Mrs. H. P. Bracelin, whose careful attention to the labeling and distribution of all of Mrs. Mexia's South American and Mexican plants has contributed in no small part toward the scientific value of those large collections.

Vochysia lomatophylla Standl., sp. nov.—Arbor 16–24-metralis, trunco usque 60 cm. diam. vel ultra, ramulis obtuse quadrangulatis crassis ochraceis sparse sericeis glabrescentibus, internodiis brevibus; folia quaternata magna fere sessilia coriacea, petiolo crasso ad 8 mm. longo sparse sericeo vel glabrato; lamina anguste oblanceolato-oblonga 17–27 cm. longa, 5–7 cm. prope apicem lata, apice rotundata vel late obtusa et saepe breviter angusteque emarginata, fere ab apice basin versus sensim angustata, basi ipsa angusta obtusa ad subtruncata, supra in sicco lutescens in statu adulto glabra sublucida, costa nervisque impressis, subtus concolor, primo ut videtur saltem secus nervos sericea, in statu adulto fere omnino glabra, costa gracili solemniter elevata, nervis lateralibus utroque latere ca. 25 gracilibus elevatis fere rectis angulo semirecto vel paullo latiore adscendentibus prope marginem in nervum conspicuum collectivum conjunctis, venulis prominentibus arcte reticulatis; racemi in axillis ut videtur solitarii 11–23 cm. longi sat dense multiflori ca. 3.5 cm. lati 4.5–12 cm. longe pedunculati, rhachi crassa laxe aliquanto sericea, floribus plerumque in cymulas parvas paucifloras breviter pedunculatas dispositis, pedicellis cito glabratis usque 9 mm. longis; sepala minora ca. 2–2.5 mm. longa subrotundata, apice rotundata, ciliata, calcare angusto 8–9 mm. longo obtuso paullo ultra 1 mm. lato; petalum anticum late oblongum 11 mm. longum 6 mm. latum apice subrotundatum glabrum; stylus ca. 12 mm. longus fere filiformis glaber.—Peru: On river bank, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, January 13, 1935, *José M. Schunke* 14 (type in Herb. Field Mus.). Argelia, Dept. Loreto, January, 1911, *W. Fox* 76.

Local name Timareo de altura. Flowers yellow. In most respects, especially in nervation of the leaves, this is similar to *V. Braceliniae*, but the shape and proportions of the leaves are so different that it seems probable that two distinct species are represented.

EUPHORBIACEAE

Alchornea triplinervia (Spreng.) Muell. Arg. in DC. Prodr. 15, pt. 2: 909. 1866. *Antidesma triplinervium* Spreng. Neue Entd. 2: 116. 1821.—In South America the species is common in many parts of its wide range, from southern Brazil to Colombia. So far as I know, it has not been recorded for North America, but the following collection is referable to it: Panama: Rain forest, crest of Cana–Cuasi trail, Chepigana District, Prov. Darién, alt. 1,650 meters, March, 1940, *M. E. & R. A. Terry* 1575. A shrub of 2.5–3.5 meters. Pax in his monographic account of the genus (Pflanzen-

reich IV. 147, vii: 227. 1914) recognizes eight varieties of *A. triplinervia*. In his key the Panama collection would run to var. *parvifolia* (Miq.) Muell. Arg., which he reports only from Brazil.

Croton Standleyi Steyermark, sp. nov.—Frutex, ramulis cinereo-stellato-pubescentibus; foliis longe petiolatis, petiolis 4–8 cm. longis, cinereo-stellato-pubescentibus, laminis late ovatis subhastatis vel folia *Gossypii* simulantibus, apice acutis vel breviter acuminatis, basi profunde cordatis, nervis lateralibus 6–7-jugis, pagina superiore parce leviterque stellato-pubescente, pagina inferiore pallidiore, dense cinereo-stellato-pubescente, margine integro vel subintegro; inflorescentia terminali, abbreviata, 5 6.5 cm. longa; calyce florum masculorum dense flavido-stellato-pubescente; capsula 7 mm. longa, 7 mm. lata, modice dense breviterque cinereo-stellato-pubescente; semine fusco, calvo, 5–5.6 mm. longo.—Panama: Chiriquí, Boquete District, Volcán de Chiriquí, alt. 2,100 meters, *M. E. Davidson* 892 (type in Herb. Field Mus.).

This new species of *Croton* is named in honor of Mr. Paul C. Standley, who first brought the material to the author's attention. Its slightly hastate-lobed or somewhat *Gossypium*-like leaves simulate superficially those of *C. gossypifolius* Vahl, which has ferruginous-tomentose capsules and very long-acuminate leaves with denticulate margins. The gray, cinereous, stellate pubescence developed to a slight degree on the capsules and more markedly on the lower leaf surface, together with the entire or subentire leaf margins, subhastate-lobed, acute, deeply cordate leaves, and short inflorescence distinguish *C. Standleyi* from its nearest allied species, *C. panamensis* M. Arg. and *C. Billbergianus* M. Arg.

Euphorbia pulcherrima Willd. f. **lutea** Standl., forma nov.—Bracteae inflorescentiae pallide luteae; caetera ut in forma typica speciei.—Salvador: Finca Venecia, near Soyapango, December 21, 1938, *Dr. Mario Levy Van Severén* 67 (received through Dr. Salvador Calderón; type in Herb. Field Mus.).

"Pascua amarilla." The form of the cultivated poinsettia having pale yellow bracts is not common in cultivation nor is it very rare. It has been known for a long time, but I do not find that there is any proper Latin name to designate it. The form is mentioned by Boissier in his account of *Euphorbia* in DeCandolle's *Prodromus* (15, pt. 2: 72. 1862) as "*E. lutea* Alaman in DC. h.," but that name is mentioned merely in synonymy.

Jatropha Standleyi Steyermark, sp. nov.—Frutex, ramulis glabris; foliis oblongo-obovatis, petiolatis, integris, omnino glabris, basi cuneatis acutis, apice late rotundatis vel truncatis, abrupte et obtuse mucronatis, nervis lateralibus 6–7-jugis, chartaceis, 4–10.5 cm. longis, 2.5–5.5 cm. latis, margine paullo incrassato, basi laminae glandulis stipitatis onusta, petiolo 0.8–1.1 cm. longo, scarioso-alato; floribus non visis; capsula rhomboidea vel subquadrata, 2-loculari, carinata, 2.5 cm. lata, 1.6 cm. alta; calyce persistente.—Mexico: Tehuantepec, Oaxaca, July, 1936, *E. Matuda* 2260 (type in Herb. Field Mus.).

Jatropha Standleyi, with its large, simple, glabrous, entire, oblong-obovate leaves, cuneate at the base, is one of the most distinct species of the genus. Without flowering material it is impossible to judge in which section the species most properly belongs, but superficially it appears related to *Jatropha yucatanensis* Briq. of section *Castiglionia* on the one hand and *Jatropha Isabelli* Muell. Arg. of sect. *Tuberosae* subsect. *Macrorrhizae* on the other.

Omphalea elaeophoroides Steyermark, sp. nov.—Scandens, ramulis juvenilibus fulvo-tomentellis; foliis magnis, orbiculari-ovatis, basi late rotundatis, apice rotundatis vel abrupte breviterque apiculatis, firmiter membranaceis, margine crenis longis adpressis crenato, pagina superiore glabra, pagina inferiore dense pilis brevibus puberula, 9–15 cm. longis, 6–11 cm. latis, nervis 6–10 arcuato-adscendentibus nervos 2 laterales e basi includentibus, nervis subtus prominentibus et conspicue reticulatis; stipulis parvis, non foliaceis; petiolo 2–5 cm. longo, tomentello, apice biglandulari, glandulis suborbicularibus 1.5 mm. diametro; floribus non visis; fructu crasso, subcarnoso, textura crasso, indehiscente, apice rostrato, tricarinato, 8 cm. longo, diametro 7–8 cm., tricocco; seminibus non visis.—Brazil: Amazonas, "Piraninhon," on restinga alta, Municipality Humayta, near Tres Casas, basin of Rio Madeira, September 14–October 11, 1934, *B. A. Krukoff* 6297 (type in Herb. N. Y. Bot. Gard.; fragment in Herb. Field Mus.).

A member of the section *Palmatinerviae,* this new species appears related to the membranaceous-leaved *O. oleifera.* The latter, however, is a tree with deeply cordate leaves, while *O. elaeophoroides* is a scandent plant with leaves rounded or truncate at the base. It is related also to *O. diandra* (sensu lato), from which it differs in its thinly membranaceous leaves, which are more rounded at the apex.

This species is named in allusion to *Elaeophora abutaefolia,* whose fruit the fruit of this plant resembles superficially. The fruit of

Elaeophora is 4- instead of 3-angled, has more prominent and definite ribs, and is finer-textured on the outer surface.

Phyllanthus longipes Steyermark, sp. nov.—Arbor, trunco 1.2 dm. diametro; ramis gracilibus glabris, internodiis brevibus vel elongatis; foliis breviter petiolatis chartaceis vel paullo subcoriaceis, petiolo 2.5–4 mm. longo, ruguloso; lamina elliptico-oblonga, 4–8 cm. longa, 1–3.5 cm. lata, acuminata, acumine obtuso, basi acuta, glabra, supra viridi, nervis inconspicuis, subtus pallida subglaucescente, nervis lateralibus utroque latere ca. 8; floribus ut videtur dioicis, femineis tantum visis, axillaribus, fasciculatis, pedicellis filiformibus glabris 4.5–5 cm. longis plus minusque erectis (in fructu); capsula triloculari castanea glabra laevi 5 mm. longa et 5 mm. lata, profunde emarginata, coccis dorso sulcatis; semine castaneo glabro laevi ca. 4 mm. longo et 3.5 mm. lato.—British Honduras: On hillside, El Cayo District, Vaca, May 13, 1938, *Percy H. Gentle* 2619 (type in Herb. Field Mus.; duplicate in Herb. Univ. Mich.).

This species is well characterized by its deeply emarginate capsule, each cell of which is definitely sulcate longitudinally, by the chartaceous-subcoriaceous leaves, subglaucescent on their lower surface, and by the elongate fruiting pedicels.

CELASTRACEAE

Maytenus vulcanicola Standl., sp. nov.—Arbuscula 3–4.5 m. alta omnino glabra, ramulis crassis teretibus ferrugineis rimosis, internodiis brevibus; folia alterna breviter petiolata coriacea rigidaque, petiolo crasso glaucescente 4–5 mm. longo; lamina anguste elliptico-oblonga vel anguste oblanceolato-oblonga 6–8 cm. longa 2–3 cm. lata acuta usque subrotundata, basi longiuscule cuneato-angustata, supra in sicco luteo-viridis lucida, costa tenera prominula, nervis manifestis sed vix elevatis, venulis obscuris, subtus paullo pallidior, costa gracili prominente, nervis lateralibus utroque latere ca. 7 tenerrimis irregularibus obliquis angulo semirecto adscendentibus prope marginem irregulariter conjunctis, venulis obscuris laxe reticulatis, arcte adpresso-serrata; inflorescentiae axillares e basi ramosae vix in statu fructifero ultra 1.5 cm. longae pauciflorae, floribus breviter crasseque pedicellatis; calyx sub fructu persistens 3.5 mm. latus patens profunde lobatus, lobis late ovatis apice rotundatis et apiculatis; capsula ca. 8 mm. longa viridis rugulosa, post dehiscentiam in valvulas 4 apice rotundatas soluta; semina ovalia brunnea.—Panama: Near summit of Volcán de Chiriquí, Boquete District, Prov. Chiriquí, alt. 3,360 meters, February 12, 1940, *M. E. Terry* 1309 (type in Herb. Field Mus.).

Probably this is an addition to the rather small number of species known to be localized about the summit of the Volcano of Chiriquí. Like most species of the genus, it has no outstanding characters, but it does not agree closely enough with any of the named species with which it has been compared.

ICACINACEAE

Oecopetalum Greenmanii Standl. & Steyerm., sp. nov.—Arbor, ramulis ut videtur viridibus teretibus ad nodos aliquanto incrassatis glabris; folia majuscula breviter petiolata subcoriacea, petiolo crasso 0.8–1.5 cm. longo canaliculato glabro vel primo sparse sericeo; lamina oblonga, elliptico-oblonga vel interdum lanceolato-oblonga 14–20 cm. longa 3.5–8 cm. lata acuta vel subacuminata, basi obtusa et subito breviterque contracta, supra in sicco sublucida glabra, costa nervisque prominulis, venis manifestis et laxe reticulatis, subtus in sicco fere concolor saltem in statu adulto glabra, costa gracili elevata, nervis lateralibus utroque latere 8–10 prominentibus tenerrimis angulo lato abeuntibus prope marginem arcuato-junctis, venis inconspicuis prominulis laxe reticulatis; inflorescentia terminalis vel saepius axillaris cymosa dichotoma et repetite ramosa densiuscule multiflora breviter vel longe crasseque pedunculata usque 5 cm. longa atque 6 cm. lata, in statu fructifero usque 9 cm. longa, pedunculo ramisque sparse vel dense sericeis, floribus sessilibus dense aggregatis albis, bracteis omnibus minutis pallidis subulatis vel lanceolatis; calyx in anthesi 1.5–2 mm. longus, lobis erectis ovatis acutis minute sericeis 0.7–1 mm. longis, in statu fructifero persistentibus, lobis late lanceolatis 5.5–6.5 mm. longis inferne 3 mm. latis; corolla in alabastro obtusissima, petalis 5 liguliformibus 5–5.5 mm. longis 1.5–1.6 mm. latis apice rotundatis, extus minute sericeis, intus longitrorsum carinatis et ad carinam pilosulis, marginibus incurvis; antherae anguste oblongae 4 mm. longae 1 mm. latae erectae, filamentis 1.2 mm. longis 0.5 mm. latis; ovarium superum conicum 1-loculare 1 mm. longum 0.75 mm. latum; ovulum 1 ex apice loculi pendulum, stylo 3.5 mm. longo glabro, stigmate non dilatato obtuso; fructus capsularis indehiscens 1-locularis monospermus, pericarpio brunnescente ruguloso, ambitu depresso-ovoideo-globosus et aliquanto obliquus bicarinatus et secus carinam subcompressus glaber, apice late rotundatus et breviter rostratus, rostro 1.5 mm. longo.—Guatemala: Dept. Izabal, Río Dulce, 2–4 miles west of Livingston, on south side (left-hand side going up the river), at sea level, April 16, 1940, *Julian A. Steyermark* 39516 (type in Herb. Field Mus.).

The genus *Oecopetalum* Greenm. & Thompson was published and illustrated in 1914 (Ann. Mo. Bot. Gard. 1: 408. *pl. 25*), being based upon *Purpus* 6159, from the Sierra Madre near Miscantla, Veracruz, Mexico. Until the present time a single species has been known, and the fruit never has been described. The original species, *O. mexicanum* Greenm. & Thompson, has been collected also in western Guatemala: Dept. Quezaltenango, Volcán de Zunil, in virgin forest, alt. 1,740 meters, August, 1934, *Skutch* 954; a tree of 12 meters, the trunk 30 cm. in diameter; flowers white. Dept. Suchitepéquez, in forest, Finca Moca, alt. 1,140 meters, January, 1935, *Skutch* 2080; a tree of 18 meters, the trunk 30 cm. in diameter, slender, smooth, brown; flowers white, fragrant.

The most recent collection of the genus comes from a region floristically distinct from those in which *O. mexicanum* has been collected, and would be expected to represent a different species. Careful study shows that such is the case. *O. Greenmanii* differs from *O. mexicanum* in the following respects: petals sericeous rather than glabrous outside, only 5–5.5 mm. long (6.5–7.5 mm. in *O. mexicanum*); shorter filaments, 1.2 mm. rather than 2 mm. in length; leaves with 8 10 rather than 4–6 pairs of lateral nerves. The flowers of *O. Greenmanii* are decidedly smaller; the leaves average smaller, and are almost concolorous, those of *O. mexicanum* being much paler beneath in the dry state. It may be stated, however, that fresh leaves of *O. Greenmanii* are paler on the under surface, although this does not show in dried specimens.

The species is named quite appropriately for Dr. J. M. Greenman, one of the co-authors of the genus *Oecopetalum.*

SAPINDACEAE

Paullinia Mexiae Steyermark, sp. nov.—Planta volubilis, ramulis teretiusculis, striatis; foliis pinnatis, 5-foliolatis, petiolo gracili 2.5–4 cm. longo glabro exalato, rhachi 2–2.5 cm. longa glabra exalata; foliolis membranaceis, utrinque viridibus, 8–10 cm. longis, 2.5–4 cm. latis, glabris, remote et grosse dentatis, crenaturis utroque latere 3 vel 4, lanceolatis, oblongo-lanceolatis vel elliptico-lanceolatis, obtusis, nervis adscendentibus, 7–8-jugis, foliolis superioribus 3 sessilibus, foliolis inferioribus 2 ad 3 mm. longe petiolulatis, foliolo terminali basi cuneato vel attenuato-decurrente, foliolis ceteris basi plerumque rotundatis vel obtusis; inflorescentiis racemoso-thyrsoideis, 6.5–9 cm. longis, bracteis et bracteolis minimis; pedicellis 2–4 mm. longis, minute puberulis, valde inaequalibus; floribus albis;

sepalis glabris vel interioribus minute sericeis, pallido-viridibus, 3.5–4 mm. longis, obtusis; petalis albis, 4 mm. longis, oblongis, obtusis; fructus non visus.—Mexico: Temisco, Barranco de la Guacamaya, Sierra Madre del Sur, north of Río Balsas, Distrito Adama, Guerrero, November 19, 1937, *Ynes Mexia* 8855 (type in Herb. Field Mus.).

This species of *Paullinia* is related to *P. costata* Schl. & Cham., from which it is distinguished chiefly by its toothed leaflets.

RHAMNACEAE

Crumenaria Steyermarkii Standl., sp. nov.—Herba annua debilis ramosa erecta vel adscendens usque 30 cm. alta, ramis gracillimis subangulatis sparse pilis brevibus subadpressis hispidulis, internodiis plerumque foliis longioribus; stipulae lineares sparse ciliatae petiolo aequilongae; folia parva alterna breviter petiolata herbacea, petiolo gracili 2–4 mm. longo sparse incurvo-pilosulo vel fere glabro; lamina ovata vel oblongo-ovata 10–15 mm. longa 5–10 mm. lata acuminata usque obtusa, basi rotundata, integra vel basin versus obscure adpresso-crenata, supra glabra, subtus sparse ad costam nervosque adpresso-hispidula, e basi 5-nervia, costa utroque latere supra medium nervos 3 emittente; pedunculi axillares filiformes 1–2-flori foliis longiores glabri, floribus ad apicem sessilibus vel brevissime pedicellatis albis; calyx petaloideus 1.75–2.5 mm. longus, tubo turbinato-campanulato olivaceo 1–1.5 mm. longo, lobis 5 petaloideis albis ovatis subito acuminatis 0.8–1.2 mm. longis 0.7–0.8 mm. latis membranaceis; petala 5 minuta in sinubus inter calycis lobos inserta albida erecta tenuiter membranacea ovato-elliptica 0.6–0.7 mm. longa, marginibus incurvis; stamina petalis opposita 5 longitudine petala aequantia, filamentis filiformibus albis 0.3–0.4 mm. longis, in sinubus inter calycis lobos inserta, antheris 0.2 mm. longis fulvis versatilibus late oblongis; ovarium viridescens 3-loculare, ovulo in quoque loculo 1 loculum omnino implente; stylus brevis, stigmatibus 3; ovarii basis basi tubi calycini paullo adnata; fructus obovoideus trilobus ca. 5 mm. longus et 4 mm. latus apice lato breviter emarginatus, basi angustatus et brevissime emarginatus, pilis brevibus albidis crassis et fere verruculiformibus sat dense conspersus.—Guatemala: In shade of trees in wooded section of llanos, Dept. Jutiapa, along railroad between Agua Blanca and Amatillo, alt. 950–990 meters, October 24, 1939, *Julian A. Steyermark* 30448 (type in Herb. Field Mus.). Dept. Chiquimula, grassy slope of Mount Tojás, near village of Sasmo, alt. 420–520 meters, October, 1939, *Steyermark* 30217.

If one were asked to guess what genus of South American plants previously unreported from North America were to be found next in Central America, few would be less likely to be mentioned than *Crumenaria*. The plant here described, however, is clearly a member of this small genus, as was determined by Dr. Steyermark after careful dissection and study of the flowers. Of *Crumenaria* there have been known heretofore half a dozen species, ranging from Minas Geraes, Brazil, southward into Paraguay and Argentina. Most of them are suffrutescent, leafless plants, somewhat suggestive in habit of *Ephedra*, but others are wholly herbaceous and have well developed leaves. Of the Brazilian species the one most similar in general appearance to *C. Steyermarkii* is *C. Glaziovii* Urban, a densely branched perennial with somewhat woody base.

TILIACEAE

Mortoniodendron guatemalense Standl. & Steyerm., sp. nov. Arbor gracilis parva, ramulis gracilentibus, teretibus, fere glabris vel terminalibus juvenilibus parce stellato-pubescentibus, internodiis 1-2 cm. longis; foliis distichis; petiolis 5-10 mm. longis, minute et parce stellato-pubescentibus; limbo oblongo-elliptico vel oblongo-lanceolato, 8-15 cm. longo, 2-5 cm. lato, abrupte longe acuminato, acumine subacuto, basi paullo inaequali, subacuto vel obtuso, integro, membranaceo, utrinque viridi, concolore, supra praeter costam mediam parce stellato-pubescentem glabro, subtus pagina plerumque glabro, nervis et costa media glabris vel parce stellato-pubescentibus, basi trinervio, nervis lateralibus 6-7-jugis adscendentibus; floribus paucis, cymosis, cymis 4.5-7 cm. longis, ramulis ochroleucis minute et dense pilis adpressis stellato-pubescentibus, pedicellis 4-12 mm. longis; sepalis 5, ovatis, 8-10 mm. longis, 4 mm. latis, acutis, crassis, ochroleucis, extus dense stellato-pubescentibus, intus glabris; petalis 5, sepalis paullo brevioribus, ovatis vel ovato-lanceolatis, acutis vel acuminatis, glabris, 5-8 mm. longis, 3-3.5 mm. latis; staminibus numerosis, congestis, glabris, inaequalibus, fasciculatis, exterioribus brevissimis, petalis oppositis; ovario dense stellato-pubescente, superne angustato; stylo 4 mm. longo; fructus non visus.—Guatemala: Limestone soil, bank of Río Dulce, July 21, 1936, *W. R. Hatch & C. L. Wilson* 54 (type in Herb. Field Mus.). Damp ravine, Finca Alsacia, Los Amates, alt. 360 meters, July 17, 1936, *Hatch & Wilson* 43.

Mortoniodendron guatemalense is distinguished by its combination of thinly membranaceous, mostly glabrous leaves and appressed, minute, stellate pubescence of pedicels, petioles, sepals, and young branches. As in *M. membranaceum,* the leaves are thin, but the two differ in the amount and kind of pubescence, that in *M. membranaceum* consisting of conspicuous, loose, spreading, relatively long, stellate hairs, especially on young branches, petioles, pedicels, and sepals, while that of *M. guatemalense* is shorter and more appressed. Also, in *M. membranaceum* there are many conspicuous, small, hairy tufts or fascicles of stellate hairs on the lower surface of the leaves, especially along the midrib and lateral nerves, whereas in *M. guatemalense* the lower surface is practically smooth.

Mortoniodendron guatemalense differs from *M. anisophyllum* chiefly in its membranaceous instead of subcoriaceous leaves, which are of a narrowly elliptic- or oblong-lanceolate instead of ovate shape.

Mortoniodendron membranaceum Standl. & Steyerm., sp. nov.—Arbor gracilis 4.5 m. alta; ramulis gracilentibus, teretibus, ochraceis vel fulvis vel terminalibus juvenilibus viridibus, laxe stellato-pubescentibus, pilis albo-luteis patentibus, internodiis 0.8–5 cm. longis; foliis distichis, petiolis 3–5 mm. longis teretibus, dense stellato-pubescentibus, pilis patentibus; limbo elliptico-oblongo, oblongo vel oblongo-lanceolato, 4–11.5 cm. longo, 2–4 cm. lato, plerumque abrupte longiacuminato, acumine obtusiusculo, basi valde inaequali obtuso vel subrotundato, integro, membranaceo, utrinque viridi, concolore, supra praeter nervos parce pubescentes glabro, subtus praeter nervos et axillas nervorum sparse stellato-pubescentes glabro, basi trinervio, nervis lateralibus 5–7 divaricato-adscendentibus; floribus paucis, cymosis, cymis 2–4 cm. longis, ramulis dense stellato-pubescentibus, pilis luteis patentibus, pedicellis crassis 5–8 mm. longis; sepalis 5, late lanceolatis, 8–9 mm. longis, 4–5 mm. latis, acutis, valde crassis gummosisque, lacteo-luteis, extus dense stellato-pubescentibus, intus glabris; petalis 5, sepalis paullo brevioribus, lanceolatis, acutis, glabris, 5–6 mm. longis, 2.5 mm. latis; staminibus numerosis, congestis, glabris, inaequalibus, fasciculatis, exterioribus brevissimis, interioribus longissimis, petalis oppositis; ovario dense stellato-pubescente, superne angustato; stylo 2–2.5 mm. longo, glabro, simplici, antheras paullo excedente; stigmate simplici subcapitellato; fructus non visus.—Honduras: Dept. Atlántida, a tree about 4.5 meters tall, in moist ravine, mountain slope near Puente Alto stop on S. F. Co. R. R., east of La Ceiba, alt. 240 meters, July 19, 1938, *T.G. Yuncker, J. M. Koepper & K. A. Wagner* 8519 (type in Herb. Field Mus.). In open forest on mountain slope back of Roma switch of the S. F. Co. R. R., about 15 miles east of La Ceiba, alt. 300 meters, July 21, 1938, *Yuncker, Koepper & Wagner* 8579. Bank of Danto River, slopes of Mt. Cangrejal, alt. 240 meters, July 16, 1938, *Yuncker, Koepper & Wagner* 8479.

The discovery of a second species of *Mortoniodendron* in July, 1938, followed within a few months the original publication of the genus. This second species, *M. membranaceum,* agrees in all fundamental generic characters with *Mortoniodendron,* and at the same time exhibits numerous specific deviations from *M. anisophyllum.* The branches, petioles, and pedicels of *M. membranaceum* are densely stellate-pubescent, its leaves are thinly membranaceous instead of subcoriaceous, and the lower surface is provided along the midrib and lateral nerves with numerous tiny hairy tufts. Further, the petioles and leaves in *M. membranaceum* are much shorter, and the hairs on the outside of the sepals are much longer and more conspicuous than in *M. anisophyllum.*

THEACEAE

Eurya panamensis Standl. in Woodson & Seibert, Ann. Mo. Bot. Gard. 25: 829. 1938.—The type is *Gene & Peggy White* 16 from the valley of the upper Río Chiriquí Viejo, Province of Chiriquí, Panama. Two more recent collections are now at hand: Panama: Vicinity of Casita Alta, Volcán de Chiriquí, alt. 1,500–2,000 meters, *Woodson, Allen & Seibert* 791; a tree of 8 meters, the flowers yellow. Volcán de Chiriquí, alt. 2,700 meters, *M. E. Terry* 1350; a tree of 4.5–6 meters.

GUTTIFERAE

Clusia dichrophylla Standl., sp. nov.—Arbuscula 3–4.5 m. alta omnino glabra, ramulis gracilibus teretibus ochraceis vel brunnescentibus fere laevibus, internodiis brevibus; folia inter minora petiolata in sicco membranacea, petiolo gracili 1–2 cm. longo anguste canaliculato; lamina elliptica vel elliptico-ovata 8–13.5 cm. longa 4–6 cm. lata subito acuminata vel longiacuminata, basi acuta usque subrotundata, supra in sicco lucida olivacea, costa tenera elevata, nervis lateralibus tenerrimis prominulis, subtus pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 30 vel ultra tenerrimis prominulis fere rectis approximatis aliquanto irregularibus juxta marginem in nervum irregularem collectivum junctis; inflorescentia terminalis parva brevissime crasseque pedunculata ut videtur triflora, floribus breviter crasse pedicellatis vel fere sessilibus; bracteae parvae late rotundatae vix ultra 3 mm. longae; sepala inaequalia orbicularia, interioribus in alabastro 6–7 mm. longis vel ultra, exterioribus minoribus.—Panama: Rain forest, crest of Cana-Cuasi trail, Chepigana District, Prov. Darién, alt. 1,500 meters, March 15, 1940, *M.E. & R. A. Terry* 1565 (type in Herb. Field Mus.).

There seems to be no end to the species of *Clusia* growing in Central America, the foliage showing great variation in almost every direction, so that often it is difficult to determine where specific limits should be drawn. There is great probability that ampler material will necessitate the reduction of some species described from the region, but there is equal probability that further species will be found for description. The species here described appears to be a valid one, isolated by the somewhat distinctive form of the unusually thin leaves, which are distinctly paler beneath, and have very numerous, fine, closely parallel nerves.

Hypericum Steyermarkii Standl., sp. nov.—Arbor 6-9-metralis omnino glabra, ramis teretibus brunneis vel brunnescentibus subnodulosis, internodiis ca. 1 cm. longis; folia majuscula sessilia membranacea dense pellucido-punctata oblongo-ovata usque lanceolato-oblonga 3-6.5 cm. longa 1-2.2 cm. lata, superiora quam aliis paullo latiora, acuta et apiculata, basi obtuso-cuneata et ima basi breviter auriculata, supra viridia sublucida, nervis prominulis, subtus pallidiora sparse nigro-punctata, costa tenera prominente, nervis venisque obscuris laxe reticulatis; flores pauci magni terminales fasciculati vulgo 3 vel 4, pedicellis 1-2 cm. longis crassiusculis interdum curvis; sepala ovali-ovata 5-6 mm. longa acuta viridia secus marginem et ad apicem glandulis parvis nigris notata; petala intense lutea persistentia et firma ca. 2 cm. longa multilineata post anthesin erecta obovata apice rotundata prope apicem paucipunctata; stamina numerosa basi breviter connata, in phalanges 5 aggregata, petalis fere duplo breviora, antheris vix 0.6 mm. longis; styli 5 distincta; capsula ovoidea 14 mm. longa basi 1 cm. lata subobtusa 5-locularis; semina numerosa oblonga 2-2.5 mm. longa pallide brunnea utrinque abrupte contracta minute reticulata.—Guatemala: Dept. Quezaltenango, Volcán de Santo Tomás, alt. 2,500-3,700 meters, January 22, 1940, *Julian A. Steyermark* 34760 (type in Herb. Field Mus.).

During the past few years many well marked new species have been discovered in Central America, but none more striking than this, or less expected. *Hypericum Steyermarkii* has no close allies in either Mexico or Central America.

Tovomita membranifolia Standl., sp. nov.—Frutex 2-3-metralis, ut videtur dense ramosus glaber, ramis gracillimis teretibus

viridescentibus laevibus, internodiis elongatis; folia parva prope apices ramorum aggregata et interdum subverticillata breviter petiolata tenuiter membranacea, petiolo gracili ca. 7 mm. longo; lamina lanceolato-oblonga vel anguste elliptico-oblonga 6-9.5 cm. longa 2-3.5 cm. lata acuminata, apice ipso obtuso, basi acuta, supra in sicco opaca olivacea, costa tenerrima prominente, nervis venisque obscuris, subtus multo pallidior sublucida, costa tenera prominente, nervis lateralibus utroque latere ca. 12 irregularibus tenerrimis angulo latiusculo abeuntibus leviter arcuatis juxta marginem junctis obscuris, venis vix prominulis laxe reticulatis; fructus (unus apertus tantum visus) ca. 1 cm. longe pedicellatus, valvis 4 elliptico-oblongis 2 cm. longis 9 mm. latis apiculatis intus nervosis.—Panama: Cana-Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 10, 1940, *M. E. & R. A. Terry* 1478 (type in Herb. Field Mus.).

Only two other species of *Tovomita* are recorded for Central America. The plant here described is not similar to either of them, but habitally it bears some resemblance to certain South American ones, although not agreeing wholly with any of them.

MELASTOMACEAE

Conostegia sororia Standl., sp. nov.—Frutex 3-4.5 m. altus, ramulis teretibus longitrorsum striatis, novellis dense furfuraceo-stellatis atque sparse hispidis, internodiis superioribus brevibus vel elongatis; folia modica petiolata crasse membranacea, petiolo crassiusculo 1.3-2.8 cm. longo dense tuberculato-stellato-tomentello et saltem supra breviter hispido; lamina late obovata usque oblongo-obovata 9.5-18.5 cm. longa 5.5-8 cm. lata, apice acuta vel obtusa et longe caudata, acumine lineari 1.5-2 cm. longo, basin versus paullo arcuato-cuneata, basi ipsa obtusa, supra in sicco viridis glabra, costa subimpressa, nervis planis, subtus pallidior, ad nervos venasque sparse minute stellato-puberula et ad costam hinc inde hirsuta, 5-nervia, nervis extimis tenerrimis, margine integro vel obscure undulato-denticulato; inflorescentia terminalis parva crasse 5 cm. longe pedunculata ca. 4 cm. longa et 3 cm. lata thyrsiformi-paniculata dense subpauciflora, ramis brevibus dense stellato-tomentellis, pedicellis vix ultra 3 mm. longis interdum nullis crassiusculis; fructus ut videtur fere maturus hemisphaerico-globosus 5-6 mm. diam. minute adpresse stellato-puberulus, basi persistente calycis 5 mm. lata vix ad 2 mm. alta.—Panama: Cana-Cuasi trail, Camp 1, Chepigana District, Prov. Darién, alt. 240 meters, March 7, 1940, *M. E. & R. A. Terry* 1414 (type in Herb. Field Mus.).

The nearest relative of *Conostegia sororia* is *C. puberula* Cogn., of Panama and Costa Rica. In that the leaves are 5-plinerved and the calyx tube is consistently constricted or narrowed at the base, rather than broadly rounded, as in the plant here described. There are also appreciable differences in the pubescence of the two species.

Topobea pluvialis Standl., sp. nov.—Frutex 2.5–3.5 m. altus fere glaber, ramis teretibus ochraceis saepe inter nodos fistuloso-incrassatis et duplo crassioribus, novellis in sicco fuscis sparse minuteque puberulis; folia subaequalia modica breviter petiolata crasse membranacea, petiolo gracili 1.3–2 cm. longo primo minute furfuraceo-puberula cito glabrato; lamina anguste elliptico-oblonga usque ovali-elliptica vulgo 10–17 cm. longa et 5–8 cm. lata, apice acuta ad subrotundata et caudata vel caudato-acuminata, acumine angusto usque 1.5 cm. longo, basi acuta vel obtusa, integra, supra in sicco fusca sublucida, primo ut videtur sparse et minutissime furfuraceo-puberula, cito glabra, nervis venisque subimpressis, subtus paullo pallidior brunnescens, primo minute ad nervos puberula, in statu adulto glabra, 5-plinervia, nervis teneris prominentibus, venis numerosissimis creberrimis tenerrimis subimpressis; flores in axillis foliorum fasciculati pauci, pedicellis 10–17 mm. longis minute puberulis vel fere glabris; bracteae basi breviter coalitae ovatae vel late ovatae ca. 7 mm. longae calyce fere duplo breviores acuminatae minute puberulae vel glabrae; calycis tubus semiglobosus 4–5 mm. longus basi late rotundatus glaber, limbo late campanulato ca. 4 mm. alto et 8 mm. lato glabro truncato, dentibus minutis remotis; petala alba elliptica ca. 1 cm. longa glabra.—Panama: Rain forest, crest of Cana–Cuasi trail, Chepigana District, Prov. Darién, alt. 1,200 meters, March 15, 1940, *M. E. & R. A. Terry* 1560 (type in Herb. Field Mus.). Same region, alt. 1,650 meters, March 15, 1940, *M. E. & R. A. Terry* 1557.

The relationship is clearly with *Topobea inflata* Triana, whose type was collected between Barbacoas and Tuquerres, Colombia. Both agree in having elongate, fusiform swellings of the branches between the nodes, presumably shelters for ants, but these swellings are much more developed in the Colombian species. *T. inflata* has 3-nerved leaves, while those of *T. pluvialis* are 5-plinerved.

Topobea urophylla Standl., sp. nov.—Frutex ut dicitur aut scandens et epiphyticus vel terrestris et 2.5–3.5 m. altus, ramis teretibus aliquanto nodosis brunnescentibus elevato-lenticellatis, primo dense minuteque stellato-furfuraceo-tomentellis, glabrescentibus, ad nodos saepe breviter setosis, internodiis brevibus vel elongatis; folia subaequalia modica vel magna petiolata rigide membranacea vel fere subcoriacea, lamina elliptica, ovato-elliptica vel latissime elliptica plerumque 10–17 cm. longa et 5–9.5 cm. lata, apice acuta usque rotundata et subito caudato-acuminata, acumine angusto 1–1.5 cm. longo, basi subacuta usque rotundata, supra in sicco fusca glabra, nervis venisque planis, subtus vix pallidiore brunnescente ad nervos furfuraceo-stellato-puberula, aliter fere glabra, 5-nervia, nervis teneris prominentibus; flores numerosi vel pauci in axillis foliorum fasciculati, pedicellis crassis 4–8 mm. longis dense stellato-furfuraceis; bracteae latae basi breviter connatae ca. 7 mm. longae et calyce duplo breviores extus sparse minute stellato-puberulae vel glabratae, apice rotundato breviter recurvo; calycis tubus subglobosus 6–8 mm. longus minute stellato-furfuraceus, limbo late campanulato ca. 7 mm. long. et 10 mm. lato extus dense stellato-furfuraceo fere ad medium 6-lobato, lobis approximatis obtusis suberectis; petala pallide rosea extus stellato-tomentosa ca. 1 cm. longa intus glabra apice obtusissima; antherae oblongae ca. 3 mm. longae glabrae; ovarium fere ad basin liberum glabrum.—Panama: Río Balsa, above Tucuti, Chepigana District, Prov. Darién, near sea level, March 6, 1940, *M. E. & R. A. Terry* 1411 (type in Herb. Field Mus.). Cana–Cuasi trail, Chepigana District, alt. 1,200 meters, March 12, 1940, *M. E. & R. A. Terry* 1517.

In Cogniaux's account of the genus (in DC. Monogr. Phan. 7: 1082. 1891) this would run in the key to either *Topobea ciliata* Cogn. of Ecuador or *T. Watsonii* Cogn., of the Río Chocón, Guatemala. It is not likely to be confused with either of those species.

MYRSINACEAE

Parathesis hondurensis Standl., sp. nov.—Frutex 1.5 m. altus, ramis crassiusculis teretibus fusco-ochraceis, novellis dense furfuraceo-puberulis, internodiis plerumque brevibus; folia modica breviter petiolata subcoriacea, petiolo crasso 6–12 mm. longo ferrugineo-puberulo; lamina lanceolato-oblonga vel elliptico-oblonga 7.5–13 cm. longa 3.5–4.5 cm. lata acuminata vel longiacuminata, basin versus subabrupte contracta et cuneato-angustata, in toto margine crebre undulato-dentata, supra in sicco fuscescens glabra, nervis subimpressis, subtus brunnescenti-viridis, primo ferrugineo-subtomentosa cito glabrescens, in statu adulto fere glabra, costa tenera elevata, nervis lateralibus utroque latere ca. 19 teneris prominentibus angulo latiusculo adscendentibus versus marginem obscuris et arcuato-junctis, venis plerumque obsoletis; inflorescentia terminalis laxe multiflora umbellato-paniculata thyrsiformis bipinnatim ramosa breviter pedunculata 8–12 cm. longa usque 5 cm. lata, ramis crassiusculis ferrugineo-tomentulosis vel glabratis, ramis primariis brevibus divaricatis, floribus umbellatis, pedicellis usque 7 mm. longis, bracteis minutis oblongis vel fere subulatis ciliolatis; fructus globosus 6–7 mm. diam. basi et apice late rotundatus glaber.—Honduras: Tegucigalpa, Montaña de la Flor, alt. 960 meters, pine and oak region near river, December, 1937, *Christine & Wolfgang von Hagen* 1240 (type in Herb. Field Mus.).

The local name is reported as Uva.

Weigeltia panamensis Standl., sp. nov.—Frutex simplex 60–120 cm. altus, caule subtereti 1.5 cm. crasso vel paullo ultra apice dense foliato sordido-ochraceo; folia inter maxima ut videtur verticillata petiolata subcoriacea, petiolo crassiusculo ca. 12 cm. longo sparse sordido-villosulo vel fere glabro; lamina late oblongo-obovata ca. 45 cm. longa et 21 cm. lata, apice late rotundata et retusa vel apiculata, basi acuta, supra in sicco fuscescens glabra, costa subprominente, nervis prominulis, subtus fere concolor fere glabra sed sparse hinc inde sordido-puberula, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 18 teneris prominentibus angulo lato adscendentibus leviter arcuatis in marginem desinentibus, venis prominentibus laxe reticulatis; paniculae numerosae petiolis subaequilongae usque 13 cm. longae breviter pedunculatae dense multiflorae bipinnatim ramosae, ramis subfastigiatis minute puberulis in sicco fuscis, pedicellis brevibus vel nullis; flores 4-meri 3 mm. lati, petalis patentibus ovato-oblongis acutiusculis extus minute puberulis; sepala minuta vix 0.4 mm. longa acuta; antherae globosae minutae.—Panama: Rain forest, Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 10, 1940, *M. E. & R. A. Terry* 1490 (type in Herb. Field Mus.).

"Flowers crimson." The genus *Weigeltia* appears to be new to the North American flora. The Panama species is obviously related to *W. simplex* (Hook. f.) Mez of Ecuador and *W. Goudotiana* Mez of Colombia (see Pflanzenreich IV. 236: 290. *f. 48.* 1904), closely resembling Mez's illustration of the latter species. In *W. Goudotiana* the leaves are acute or acuminate and the inflorescences equal or even exceed the leaves.

SAPOTACEAE

Bumelia obovata (Lam.) A. DC. in DC. Prodr. 8: 191. 1844. *Sideroxylon obovatum* Lam. Illustr. 2: 42. 1793. *Jacquinia petiolata* J. R. Johnston, Proc. Amer. Acad. 40: 693. 1905.

Jacquinia petiolata was based upon *Johnston* 273 from Margarita Island, Venezuela. The species of *Bumelia* from the north coast of South America are poorly understood and in need of revision. It may be that the Margarita plant is specifically distinct from the common West Indian *Bumelia obovata*, but it is at least very closely allied with it.

Manilkara Williamsii Standl., sp. nov.—Arbor 20–30-metralis glabra vel glabrata, ramulis crassis solemniter nodosis ochraceis longitrorsum rugosis, internodiis brevissimis; folia versus apicem rami dense inserta petiolata coriacea in sicco brunnescentia, petiolo gracili 1.5–4.5 cm. longo; lamina cuneato-obovata 7–12.5 cm. longa 4–7 cm. lata, apice latissime rotundata et retusa, basin versus fere ab apice cuneato-angustata, basi ipsa acuta, supra in sicco opaca, costa anguste profundeque impressa, nervis venisque obsoletis, subtus intensius brunnea, costa valde elevata, nervis fere occultis utroque latere ca. 14 rectis angulo lato divergentibus; flores (in alabastris tantum visi) in axillis dense aggregati, pedicellis crassis 4–5 mm. longis, alabastris oblongo-ovoideis 3–4 mm. longis obtusis.—Venezuela: Guayapo, Bajo Caura, Estado de Bolívar, alt. 100 meters, April 18, 1939, *Llewelyn Williams* 11860 (type in Herb. Field Mus.).

Regarding this tree, noteworthy in the genus for its cuneate leaves, Mr. Williams' notes are as follows: "Local name, Purguo. A tree of 20–30 meters or more, the crown spreading, with thick branches; trunk round and usually erect, 80–150 cm. in diameter, without branches for more than half its height and with 3 or more short, thick buttresses; bark reddish brown, scaly, deeply fissured, similar to that of some oaks, 2.5 cm. thick, the inner bark paler; sapwood thin, pale, the heartwood thick, varying from pinkish to dark red, susceptible to the attacks of insects. The flowers are said to be pale yellow, and the fruit to have edible pulp. The bark exudes an abundant, sticky latex, the balatá of commerce. The heartwood is highly valued for house frames and other similar purposes. The tree is found in low ground that is not very wet, and also in the high forests that are not flooded. The tree is said to grow in abundance in the mountains of Nichare, Icuta, Tres Picos, below Salto de Para, and in the vicinity of Caño de Pablo and Erevato."

EBENACEAE

Diospyros Johnstoniana Standl. & Steyerm., sp. nov.—Arbor 7.5 m. alta ramosa, ramulis gracilibus brunnescentibus vel fusco-ochraceis teretibus lenticellatis densiuscule foliatis, internodiis plerumque brevibus sparse patule hispidulis; folia parva petiolata mem-

branacea, petiolo 4–7 mm. longo hispidulo; lamina cuneato-obovato-oblonga ad oblanceolato-oblonga 3.5–5.5 cm. longa 1.5–2.5 cm. lata apice late rotundata usque obtusa, basin versus longiuscule cuneato-angustata, supra in sicco fuscescens glabra vel glabrata, costa subimpressa, nervis non elevatis, subtus concolor sparse praesertim ad costam nervosque hirtella vel glabrata, costa tenera prominente, nervis lateralibus utroque latere ca. 5 tenerrimis angulo semirecto adscendentibus fere rectis prope marginem irregulariter conjunctis, venis obscuris; calyx usque 1.5 cm. latus breviter 3–4-lobatus sparse extus hispidulus; fructus depresso-globosus viridis glaber ca. 3 cm. latus apice late rotundatus; semina aliquanto compressa fusco-brunnea 14 mm. longa 7 mm. lata, marginibus acutis.—Guatemala: Damp ravine along Río Guacalate, near Pastores, Dept. Sacatepéquez, alt. 1,600 meters, December 14, 1938, *Paul C. Standley* 59934 (type in Herb. Field Mus.).

The species is referable to the genus *Maba*, if that be maintained as distinct from *Diospyros*. It is named for Dr. J. R. Johnston, in whose company the type was collected.

STYRACACEAE

Styrax longifolius Standl., sp. nov.—Arbor 4–6-metralis, ramis crassiusculis ferrugineis longitrorsum rimosis primo dense minute stellato-tomentellis; folia magna breviter petiolata subcoriacea, petiolo crasso 1–1.5 cm. longo minute stellato-tomentello; lamina elliptico-oblonga 14–26 cm. longa 6–11 cm. lata subito anguste caudato-acuminata, basi obtusa, supra in sicco fusca sublucida glabra, costa nervisque plus minusve impressis, venis planis, subtus pallida fusco-grisea ubique nervis venisque exceptis tomento minutissimo arcte adpresso fulvido obtecta, costa gracili elevata, nervis lateralibus utroque latere ca. 11 subarcuatis prominentibus teneris angulo semirecto vel paullo latiore adscendentibus, venulis prominentibus laxe reticulatis, nervis costaque glabratis; inflorescentiae racemiformes in axillis vel ad nodos defoliatos dense aggregatae ad 9 cm. longae laxe pauciflorae, ramis et pedicellis tomento brevi ferrugineo stellato obtectis, pedicellis usque 13 mm. longis; calyx campanulatus ca. 6 mm. altus et 5 mm. latus fere truncatus, margine undulato, tomento minuto denso stellato fulvido obsitus; corolla 1.5 cm. longa extus dense adpresso-stellato-tomentella, lobis lineari-oblongis obtusis 3 mm. latis; ovarium dense stellato-tomentellum, stylo filiformi glabro 14 mm. longo; antherae dense pilosae.—Peru: On river bank, Gamitanacocha, Río Mazán, Dept. Loreto, alt. 100–125 meters, January 17, 1935, a tree 6 meters high, the trunk about

6 cm. in diameter, the flowers yellowish white, *José M. Schunke* 61 (type in Herb. Field Mus.). Balsapuerto, Dept. Loreto, alt. 220 meters, in forest, flowers white, June, 1933, *G. Klug* 3110.

The species is noteworthy in having leaves much larger than those of most other species of the genus.

HYDROPHYLLACEAE

Nama Bartlettii Standl., sp. nov.—Herba erecta ut videtur annua ramosa ca. 30 cm. alta, caulibus e basi pluribus sparse ramosis sat dense pilis gracillimis patulo-pilosis dense foliatis ubique late bialatis, alis ca. 2 mm. latis; folia sessilia membranacea anguste oblongo-oblanceolata vel spathulato-oblanceolata plerumque 2.5–5.5 cm. longa et 6–12 mm. lata, apice rotundata ad subacuta, basin versus sensim attenuata et longe decurrentia, supra laete viridia sparse hirsuta et densiuscule viscido-pilosula, subtus paullo pallidiora dense patulo-pilosa et glandulosa; inflorescentiae ex axillis superioribus nascentes plerumque 3–5-florae, plus minusve corymbiforme dispositae graciliter pedunculatae, pedicellis plerumque 2–7 mm. longis; sepala fere libera lanceolato-linearia viridia hirsuta et glanduloso-pilosula acuta, ad anthesin 5 mm. longa, in statu fructifero usque 9 mm. longa; corolla pallide purpurea ca. 8 mm. longa extus sparse pilosula, lobis latis brevibus; capsula oblonga 4 mm. longa obtusa minute sparseque adpresso-pilosula, stylis 3 mm. longis; semina ca. 30 et 0.8 mm. longa grosse reticulata.—Mexico: La Morita, vicinity of Marmolejo, Tamaulipas, alt. 510 meters, August, 1930, *H. H. Bartlett* 10745 (type in Herb. Field Mus.). Moctezuma, Tamaulipas, August 15, 1930, *Bartlett* 10960.

Evidently the plant is a relative of *Nama undulatum* HBK., a common species of Mexico, but that is usually a lower, stouter, more densely leafy herb, in which the leaves are merely sessile rather than long-decurrent as broad wings along the stems.

Nama biflorum Choisy, var. **Marshii** Standl., var. nov.—Herba ut videtur elata, caule elongato; folia magna tenuia usque 3 cm. longe petiolata, petiolo usque ad basin anguste alato; lamina rotundato-ovata vel late deltoideo-ovata vulgo 3–5 cm. longa et 3–4 cm. lata obtusa, basi truncata vel breviter cordata atque abrupte contracto-decurrens; flores racemosi, racemis usque 10 cm. longis 7–9-floris; sepala linearia 8–12 mm. longa; corolla 12 mm. longa; caetera ut in forma typica speciei.—Mexico: Ciudad Muzquiz, La Mariposa, Coahuila, December 5, 1936, *Ernest G. Marsh, Jr.* 1036 (type in Herb. Field Mus.).

At first I was inclined to believe that the plant here described represented a distinct new species, and such may well be the case. *Nama biflorum* shows a large amount of variation, and plants of this family are notoriously variable, so that the safer course seems to be to assign only varietal rank to the Coahuila plant. It differs from all specimens of *N. biflorum* that I have seen in its much larger leaves, truncate to cordate at the base, in the numerous flowers of each inflorescence, and in the substantially larger flowers. If further collections show that these characters are constant, they are sufficient for specific segregation, but there is a possibility that the plant is merely a sporadic variation, induced by abundant moisture.

Nama dichondrifolium Standl., sp. nov.—Herba ramosa ut videtur procumbens, caulibus dichotome ramosis 25 cm. longis et ultra dense pilis longis albis patulis pilosis plus minusve flexuosis; folia petiolata membranacea, petiolo usque 1.5 cm. longo dense longipiloso usque ad basin latiuscule alato; lamina reniformis vel reniformi-ovata usque 2 cm. longa et 3 cm. lata, apice obtusissima ad late rotundata, basi truncata vel breviter cordata, utrinque dense pilis longis patulis albis hirsuto-pilosa, subtus paullo pallidior; inflorescentiae axillares breviter pedunculatae plerumque triflorae, pedicellis gracillimis ad 8 mm. longis dense hirsutis; sepala anguste lineari-attenuata 5–9 mm. longa erecta dense albo-hirsuta; corolla 9 mm. longa superne 3.5 mm. lata extus sparse hispidula, lobis late rotundatis brevissimis.—Mexico: Muzquiz, Palm Canyon, Coahuila, July 9, 1936, *Ernest G. Marsh, Jr.* 301 (type in Herb. Field Mus.). Muzquiz, spring of 1935, *Marsh* 142.

The relationship is with *Nama rotundifolium* (Gray) Macbride, of Coahuila and Nuevo León, but that differs in its smaller, relatively much narrower leaves, which are green rather than hoary as in *N. dichondrifolium.*

VERBENACEAE

Clerodendron epiphyticum Standl., sp. nov.—Frutex fere glaber 80–100 cm. altus ramosus, ramis crassis, vetustioribus ochraceis plus minusve angulatis vel subteretibus sparse lenticellatis, novellis compressis et ancipitibus sparse hispidulis vel fere glabris ad nodos incrassatis, cicatricibus petiolorum obliquis, internodiis brevibus vel aliquanto elongatis; folia inter minora petiolata coriacea, petiolo crasso 4–8 mm. longo supra profunde sulcato, sparse hispidulo vel glabro; lamina elliptico-oblonga vel lanceolato-elliptica glabra 4.5–7 cm. longa 1.8–3 cm. lata breviter acuminata vel acuta, basi acuta, integra, supra lucida, costa nervisque impressis, subtus multo pallidior lutescens, costa gracili prominente, nervis lateralibus utroque latere 3–5 prominentibus irregularibus angulo angusto adscendentibus prope marginem laxe arcuato-conjunctis, venis omnino occultis, marginibus saepe revolutis; flores ut videtur fasciculati et in axillis vel ad apices ramulorum dense aggregati, pedicellis usque 18 mm. longis superne paullo incrassatis prope basin geniculatis; calycis tubus late campanulatus subcoriaceus 4 mm. longus truncatus, lobis 5 segregatis lineari-subulatis subobtusis tubo aequilongis vel interdum usque 8 mm. longis erectis; corolla in alabastro tantum visa apice obtusa extus glabra.—Costa Rica: Pejivalle, April 3, 1931, *C. H. Lankester* 1296 (type in Herb. Field Mus.). Entre la Laguna del Arenal y el Alto de La Carpintera, cerca de Tilarán, Guanacaste, alt. 650–700 meters, June 26, 1930, *A. M. Brenes* 12648.—Panama: Vicinity of El Valle, north wet rim, Prov. Coclé, alt. 800–1,000 meters, May 21, 1939, *P. H. Allen* 1824 (Herb. Mo. Bot. Gard.).

It is with considerable hesitation that I describe this puzzling and somewhat annoying plant, the two Costa Rican sheets of which were available when the *Flora of Costa Rica* was prepared. They were not listed there because the systematic position of the plant represented was then doubtful, and it is not certain even now. Habitally the plant is much like *Clerodendron Moldenkeanum* Standl. of southern Mexico, and I am inclined to believe that it is a relative of that, although substantially different. The calyx, particularly, is like or very similar to that of *C. Moldenkeanum.*

Although three sheets of specimens are at hand, none of them is satisfactory for study. Two collectors speak of the corollas, but the only corollas with the specimens are either in young bud or badly mutilated. The epiphytic habit is unusual in the Verbenaceae, but in a wet tropical forest not altogether unexpected. Some characters of the plant remind one of the Solanaceae, especially certain representatives of the genus *Lycianthes,* but what may be seen of the corolla indicates that the shrub has no place in that family.

Mr. Lankester states that the shrub grows on the upper levels of the branches, and that the corolla is purple. Mr. Allen reports the flowers as rose. Professor Brenes describes the leaves as fleshy with red nerves, the fruits as small and pinkish yellow.

SOLANACEAE

Lycianthes laxissima Standl., sp. nov.—Frutex 1–2-metralis glaber, ramis gracilibus subteretibus aliquanto tortuosis in sicco ad

nodos subconstrictis, internodiis plerumque 3–6 cm. longis; folia paris valde inaequalia majuscula brevissime petiolata membranacea, petiolo crassiusculo ad 6 mm. longo; lamina in foliis majoribus oblique oblonga vel ovali-oblonga 11–19 cm. longa 4–7.5 cm. lata subito longiacuminata, acumine angusto usque 3 cm. longo, basi valde obliqua uno latere obtusa vel rotundata altero attenuato-acuta, supra in sicco fusco-viridis, venulis prominulis arcte reticulatis, subtus paullo pallidior aliquanto brunnescens, costa tenera prominente, nervis lateralibus tenerrimis utroque latere ca. 13 prominulis arcuatis angulo latiusculo adscendentibus; lamina in foliis minoribus parium orbicularis usque oblongo-elliptica 1–4 cm. longa; inflorescentia axillaris laxissime paniculata pauciflora graciliter longipetiolata usque 15 cm. longa folia fere aequans, pedicellis gracillimis plerumque 1–2 cm. longis; calyx latissime campanulatus vel fere rotatus vix ultra 1.5 mm. longus ca. 3 mm. latus truncatus basi obtusus; corolla viridescenti-alba 12 mm. longa ut videtur campanulata fere ad medium lobata, lobis ovatis acutiusculis; bacca globosa 9 mm. lata.—Panama: Rain forest, Bajo Chorro, Boquete District, Prov. Chiriquí, alt. 1,800 meters, January 6, 1938, *Mrs. M.E. Davidson* 67 (type in Herb. Field Mus.); March 19, 1938, *Davidson* 421.

This is one of the plants that cast suspicion upon the validity of the genus *Lycianthes*, usually an easily recognized and certainly a most convenient segregate from the vast group *Solanum*. The character of the calyx seems to necessitate reference of the Panama shrub to *Lycianthes*, yet its general aspect is altogether that of certain *Solanum* species of the same general region.

Markea suaveolens Standl., sp. nov.—Frutex scandens ut dicitur 30 m. longus et ultra, ramis crassiusculis subteretibus, cortice exfoliante brunneo, internodiis glabris vel glabratis; folia breviter petiolata coriacea, petiolo crasso 4–6 mm. longo glabro supra profunde sulcato; lamina elliptico-oblonga interdum prope apicem paullo latior 6–10.5 cm. longa 2.5–5 cm. lata obtusa, basi obtusa vel anguste rotundata, glabra, supra in sicco lucida, costa nervisque subimpressis, subtus concolor minute puncticulata, costa gracili prominente, nervis lateralibus utroque latere 6–7 teneris prominulis subarcuatis angulo semirecto vel paullo latiore adscendentibus, venulis obsoletis; flores odori albi ad apices ramorum umbellato-aggregati, pedicellis gracilibus ca. 1 cm. longis sparse hispidulis superne incrassatis; calyx campanulatus ca. 7 mm. longus extus sparse hispidulus vel fere glaber fere ad medium lobatus, lobis ovatis vel late ovatis acuminatis erectis; corolla extus glabra 4.5 cm. longa,

tubo 13 mm. longo 2 mm. lato subabrupte in faucem dilatato, fauce ca. 2 cm. longo et 1 cm. lato, lobis latis ca. 1 cm. longis.—Colombia: Caviche, State of Boyacá, 130 miles north of Bogotá, in high, cool forest, alt. 1,200 meters, April 15, 1933, *A. E. Lawrance* 751 (type in Herb. Field Mus.).

Local name, Bejuco opa. "The corolla is white when first open, but turns to brilliant canary yellow before falling. The perfume is supremely exquisite."

Markea uniflora Lundell, Phytologia 1: 340. 1939.—The type is *Matuda* 2816 from the Volcán de Tacaná, Chiapas, Mexico, at 2,800 meters. The species occurs also in Guatemala: Dept. San Marcos, between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, February 22, 1940, *Steyermark* 36465. "A woody liana. Leaves coriaceous, dark green above, paler green beneath. Calyx 5-angled, light green, the margins brick-colored. Corolla pale olive-green, the tips of the lobes rolled inward and back. Hanging from a tree along a stream." The species is a well marked one, but the specific name is inappropriate, at least for the beautifully prepared specimen cited above. The inflorescence is actually a large, leafy cyme bearing three or five flowers, not one-flowered, as described and as shown in the cotype deposited in the Herbarium of Field Museum.

RUBIACEAE

Amphidasya ambigua Standl. Field Mus. Bot. 11: 181. 1936. *Sabicea ambigua* Standl. Field Mus. Bot. 7: 49. 1930.—The genus *Amphidasya* consists of three species, all natives of Colombia. Two were first described under *Sabicea*, one of them by Wernham, monographer of that genus, but, as explained when the genus was proposed (loc. cit.), there are ample grounds for assigning them generic status. Two recent Colombian collections of *A. ambigua* may be cited here, and the species has been found to extend northward into Panama: Colombia: Dept. Nariño, east side of Gorgona Island, alt. 50–100 meters, dense forest along stream, a slender shrub, the bracts (sepals?) white, February, 1939, *Killip & García* 33176. Intendencia El Chocó, dense forest south of Río Condoto, between Quebrada Guarapo and Mandinga, alt. 120–180 meters, a suffrutescent herb up to 80 cm. high, the calyx lobes white, April, 1939, *Killip* 35146.—Panama: Rain forest, Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, an herb of 30–75 cm., March, 1940, *M. E. & R. A. Terry* 1489. Same region, alt. 1,500 meters, March 15, 1940, *M. E. & R. A. Terry* 1561; an herb of 45–75 cm.

Amphidasya bullata Standl. Field Mus. Bot. 11: 181. 1936.—The species was based upon *Triana* 3315, labeled as coming from the provinces of Chocó and Barbacoas, Colombia. The type specimen is in the Paris herbarium, but there is a photograph and fragment of it in the Herbarium of Field Museum. Mounted with the type is a specimen of some member of the Gesneriaceae. Recently Field Museum has received from the Paris herbarium two duplicate specimens bearing the same Triana number, but both of these are *Amphidasya ambigua* Standl., a quite distinct species. It is clear that there is considerable variation in the material distributed under No. 3315. It may be that the two species were found growing together, which would in no way affect their standing as distinct species, or it may well be that they came from widely separated localities.

Anisomeris caurensis Standl., sp. nov.—Arbor 8-metralis, trunco ad 20 cm. diam., ramulis sat gracilibus teretibus ferrugineis vel ochraceis incurvo-puberulis vel glabratis, internodiis elongatis; stipulae persistentes triangulari-subulatae utrinque strigosae erectae 2–3 mm. tantum longae; folia majuscula breviter petiolata tenuiter coriacea, petiolo 4–7 mm. longo glabro vel sparse pilosulo; lamina elliptico-oblonga 8–15 cm. longa 3.5–6 cm. lata longiacuminata usque subacuta, apice ipso obtusissimo, basi acuta vel subacuta, supra in sicco fusca lucida glabra, costa nervisque prominentibus, subtus paullo pallidior brunnescens in axillis nervorum sparse breviterque barbata, aliter glabra vel glabrata, costa tenera elevata, nervis lateralibus utroque latere ca. 6 teneris prominentibus angulo semirecto adscendentibus arcuatis, venis obscuris non elevatis; inflorescentiae parvae pauciflorae axillares singulae, pedunculo gracili vix ultra 5 mm. longo strigoso, floribus sessilibus cymulam capituliformem ca. 5–6-floram efformantibus, bracteis minutis; hypanthium anguste cylindraceum superne paullo dilatatum 2–2.5 mm. longum densiuscule strigillosum; calyx vix ultra 1 mm. longus profunde lobatus extus sparse strigillosus, lobis oblongis obtusis vel subacutis patentibus; corolla alba extus sparsissime minuteque strigillosa vel fere glabra, tubo gracillimo 14 mm. longo ca. 0.6 mm. crasso, lobis patentibus ovato-oblongis obtusissimis 2.5–3 mm. longis.—Venezuela: Rebalses de Guayapo, Bajo Caura, Estado de Bolívar, alt. 100 meters, April 13, 1939, *Llewelyn Williams* 11782 (type in Herb. Field Mus.).

The nearest relative of the Venezuelan tree is *Anisomeris multiflora* (Bartl.) Schum., of British Guiana. In that the leaves are not barbate beneath, and the flowers are essentially glabrous.

Bathysa obovata (Ruiz) Schum. ex Standl. Field Mus. Bot. 7: 280. 1931.—In the original description one collection from Peru and two from Bolivia were cited. An additional Bolivian one may be reported: Dept. La Paz, Prov. Larecaja, Tuiri, near Mapiri, left bank of Río Mapiri, alt. 490–750 meters, a tree of 7.5 meters, September, 1939, *B. A. Krukoff* 10759.

Cephaelis Bradei Standl., sp. nov.—Frutex 1.5–2 m. altus glaber ut videtur dense ramosus, ramis in sicco fuscis, vetustioribus teretibus, internodiis plerumque elongatis; stipulae in vaginam truncatam induratam vix 1.5 mm. altam connatae, utroque latere brevissime bidentatae; folia inter minora breviter petiolata subcoriacea, petiolo crasso vix ad 3 mm. longo; lamina lineari-lanceolata 5.5–8.5 cm. longa 0.7–1.5 cm. lata, apicem obtusum versus longe sensimque attenuata, basin angustam versus longe angusteque attenuata, sublucida, supra in sicco fusca, costa nervisque non elevatis, subtus brunnescens, costa tenera prominente, nervis lateralibus utroque latere ca. 10 tenerrimis irregularibus angulo lato abeuntibus, venis paucis obscuris; flores dense capitati, capitulis terminalibus sessilibus parvis paucifloris ca. 5 mm. longis et aequilatis; bracteae 2 exteriores ovales vel late ovatae apice obtusae vel rotundatae induratae adpressae basi brevissime coalitae, interioribus similibus vel late oblongis aequilongis; calyx in statu fructifero campanulatus 2.5 mm. longus lucidus apice breviter triangulari-dentatus; corolla alba extus glabra, tubo cylindraceo 5 mm. longo fere 1 mm. crasso, fauce paullo dilatato, lobis 5 patentibus oblongis obtusis intus glabris 2 mm. longis; fructus globosus 4 mm. longus, pyrenis dorso obtuse grosseque costatis.—Brazil: Minas Geraes, Serra do Cipó, km. 134, April 15, 1935, *H. Mello Barreto* 1255 (*A. C. Brade* 14841; herb. Jard. Bot. Rio 27660; type in Herb. Field Mus.). Same locality, February 4, 1938, *Mello Barreto* 8891 (herb. Jard. Bot. Bello Horizonte 26200); *Mello Barreto* 8920 (herb. Bello Horizonte 25912).

In the genus *Cephaelis* the present species is notable for the numerous, sessile, very small flower heads, and the rather small, narrow leaves.

Cephaelis crebrinervia Standl. Field Mus. Bot. 11: 188. 1936.—When this species was published, only the type was known, *Ducke* 15351, from Antonio Lemos, near Rio Tajapurú in the estuary of the Amazon, State of Pará, Brazil. The following additional collections, all from Brazil, are now at hand: Furo Macujabim, Bôa Vista, September, 1901, *Manoel Guedes* 2242. State of Amazonas, Municipality Humayta, between Monte Christo and Santa Victoria, on Rio Ipixuna, margin of river, a shrub of 3.5 meters, November, 1934, *Krukoff* 7263.

Chione guatemalensis Standl. & Steyerm., sp. nov.—Frutex vel arbor omnino glabra, ramis subteretibus in sicco fuscescentibus paullo nodosis, internodiis brevibus; stipulae caducae; folia majuscula petiolata subcoriacea, petiolo crassiusculo 2–2.5 cm. longo supra canaliculato; lamina anguste elliptico-oblonga 14.5–16.5 cm. longa 4.5–5.2 cm. lata breviter obtuso-acuminata, basi acuta, lucida, supra in sicco fusco-brunnescens, costa subimpressa, nervis prominulis, venis obsoletis, subtus pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 9 tenerrimis obscuris vix prominulis angulo semirecto vel paullo latiore adscendentibus, venis obsoletis; inflorescentia (perfecta non visa) terminalis cum pedunculo ca. 10 cm. longa longipedunculata ut videtur pauciflora, floribus sessilibus vel breviter crasseque pedicellatis; fructus oblongus basi et apice obtusus lucidus 2 cm. longus 8–9 mm. latus apice calyce persistente coronatus; calyx 1.5–2 mm. altus profunde dentatus, dentibus triangularibus acutis.—Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up river, on north side (right-hand side going up river), at sea level, April 14, 1940, *Julian A. Steyermark* 39375 (type in Herb. Field Mus.).

"Fruit fleshy, greenish, turning mango-orange, red in upper half. Leaves coriaceous, dark grass-green above, pale green beneath." The only other species of *Chione* with equally large fruit is the recently described *C. chiapensis* Standl., of Chiapas, Mexico. In that the fruits are equally long but only half as thick as those of *C. guatemalensis*, but this difference in thickness may be the result of mere differences in state of development. In *C. chiapensis* the leaves are excavate and barbate beneath in the axils of the primary nerves; in *C. guatemalensis* the axils are neither excavate nor barbate but smooth and quite glabrous.

Coccocypselum cordatum Krause, Anex. Mem. Inst. Butantan 1, fasc. 3: 13. *pl. 1*. 1922.—A photograph (neg. 263) and fragment of the type, *Hoehne* 753 from the State of São Paulo, Brazil, are in the Herbarium of Field Museum, and there are several recent collections that represent the species: Bolivia: Mapiri region, San Carlos, alt. 850 meters, May, 1927, *Buchtien* 1439.—Brazil: Est. de campo Grande, São Paulo, October, 1892, *Gust. Edwall* 1892 (herb. Inst. Biol. S. Paulo 11465). Estado do Rio de Janeiro, Sto. Antonio de Imbê, April, 1932, flowers and fruits blue, *Brade & Santos Lima*

11560. Estado do Rio de Janeiro, Morro Azul, March, 1932, *Brade* 11424 (herb. Mus. Nac. Rio 26131). Estado do Rio de Janeiro, Sta. Magdalena, March, 1934, alt. 700 meters, *Santos Lima & Brade* 13362 (herb. Jard. Bot. Rio 24615). Matta, Matta da Empreza, Municipio Cambuquira, Minas Geraes, December, 1935, *Mello Barreto* 6822 (herb. Jard. Bello Horizonte 20217). Matta, Fazenda da Vargem Alegre, Municipio Tombos, Minas Geraes, common, fruit blue, July, 1935, *Mello Barreto* 1607 (herb. Jard. Bello Horizonte 17275).

Coccocypselum crassifolium Standl., sp. nov.—Herba procumbens ramosa, caulibus crassis, vetustioribus ferrugineis subteretibus vel obtuse angulatis, interdum costatis, novellis densissime pilis longis adscendentibus ochraceis vel lutescentibus villosis, internodiis plerumque elongatis; stipulae e basi latiuscula subulatae usque 9 mm. longae villosae; folia breviter petiolata majuscula in sicco coriacea et rigida, petiolo crasso 5–8 mm. longo dense piloso; lamina ovata usque lanceolato-oblonga vel triangulari-ovata 4.5 7 cm. longa 2–5 cm. lata acuta vel subobtusa, apice ipso obtuso, basi rotundata et breviter lateque cordata, supra in sicco fusca ad costam nervosque saepius impressos pilosa, aliter glabra, subtus pallidior dense pilis nitentibus plerumque patulis molliter pilosa, costa crassa elevata, nervis lateralibus utroque latere ca. 8 arcuatis prominentibus et costiformibus in marginem desinentibus, infimis angulo recto abeuntibus, superioribus angulo latiusculo adscendentibus, margine saepe revoluto; capitula globosa densissime multiflora ca. 2 cm. diam., pedunculis crassis 1–2 cm. longis, bracteis viridibus oblongo-linearibus; hypanthium dense pilosum, sepalis fere liberis ca. 3 mm. longis e basi latiuscula oblongo-linearibus attenuatis acutiusculis hispidulis; corolla non visa, ut dicitur caerulea; bacca subglobosa 4.5 mm. longa sat dense hispidulo-pilosa.—Brazil: Estado do Rio de Janeiro, Serra dos Orgãos, alt. 1,600 meters, March 19, 1932, *A. C. Brade* 11455 (herb. Mus. Nac. Rio 26165; type in Herb. Field Mus.). Minas Geraes, margem de capão, Serra do Cipó, km. 128, Palacio, Municipio Santa Luzia, September, 1933, *Mello Barreto* 3503 (herb. Jard. Bello Horizonte 7085); same region, capoeira, km. 115, August, 1936, *W. A. Archer & Mello Barreto* 4990 (herb. Jard. Bello Horizonte 18063).

An ally of the widely distributed *Coccocypselum lanceolatum* (Ruiz & Pavón) Pers., which has relatively thin leaves that are evenly pilose over the upper surface. In *C. crassifolium* the pubescence of the upper leaf surface is confined to the costa and nerves.

Coccocypselum glabrifolium Standl. Field Mus. Bot. 8: 165. 1930.—When described, a single collection of this well marked species was available, a specimen of an unknown collector, from São Paulo. The following additional collections are now in the Herbarium of Field Museum, all from Brazil: Jaguariahyva, Paraná, alt. 730 meters, December, 1910, *P. Dusén* 11321, pro parte. Rio de Janeiro, *Glaziou* 17030, 8744. Minas Geraes, *Saint-Hilaire* B. 459, D. 487. Estado do Rio de Janeiro, Sta. Magdalena, Serra Turquitha, alt. 1,600 meters, March, 1935, *Santos Lima & Brade* 14269 (herb. Jard. Bot. Rio 27687). Estado do Rio de Janeiro, Sta. Magdalena, Pedra das Flores, alt. 1,200 meters, March, 1934, *Santos Lima & Brade* 13360 (herb. Jard. Bot. Rio 24613). Estado do Rio de Janeiro, Serra dos Orgãos, alt. 2,000–2,200 meters, *Brade* 11451 (herb. Mus. Nac. Rio 26161).

Coccocypselum Hoehnei Standl., sp. nov.—Herba perennis ut videtur decumbens vel procumbens, caulibus ramosis usque 30 cm. longis vel ultra crassiusculis dense pilis brevibus patulis pallidis hispidulo-pilosis, internodiis plerumque foliis longioribus; stipulae persistentes subulatae hispidulae ca. 6 mm. longae; folia inter minora breviter petiolata in sicco crasse membranacea, petiolo crassiusculo piloso 4–5 mm. longo; lamina ovata vel oblongo-ovata 2–3.5 cm. longa 1–2 cm. lata obtusa vel subacuta, basi late rotundata, supra subsparse pilis brevibus lutescentibus patulis vel subadpressis pilosa, nervis obscuris, subtus paullo pallidior ubique subsparse breviterque pilosa, costa prominula, nervis lateralibus utroque latere 4–5 obscuris tenerrimis; capitula densissime multiflora cum floribus ca. 2 cm. lata usque 3 cm. longe pedunculata, bracteis viridibus anguste lanceolato-oblongis usque 7 mm. longis acutis dense adpresso-hispidulis, floribus sessilibus; sepala fere libera oblongo-linearia ca. 4 mm. longa viridia acutiuscula; corolla ca. 11 mm. longa extus densiuscule pilis brevibus adscendentibus vel subadpressis hispidula, lobis ovato-oblongis obtusis ca. 4 mm. longis et tubo duplo brevioribus, tubo superne dilatato, lobis intus glabris.—Brazil: Jaguariaíva, Paraná, November 6, 1928, campo humido, *F. C. Hoehne* 23435 (type in Herb. Field Mus.). Prov. São Paulo, 1816–21, *Auguste de Saint-Hilaire* C. 1416 (ex herb. Paris). Jaguariahyva opp. in rupibus campestribus, Paraná, alt. 730 meters, December, 1910, *P. Dusén* 11321 pro parte.

This Brazilian plant evidently is related to *C. glabrifolium* Standl., listed above, but in that species the leaves are quite glabrous.

Coccocypselum Krauseanum Standl. Field Mus. Bot. 8: 164. 1930.—The species was based on a single collection, *Hoehne* 754 from Alto da Serra, São Paulo. Two more recent Brazilian collections are conspecific: Estado do Rio de Janeiro, Itatiaya, Repreza Taquaral, alt. 850 meters, flowers blue, February, 1936, *A. C. Brade* 15087 (herb. Jard. Bot. Rio 28211); same locality, berries blue, May, 1935, *Brade* 14641 (herb. Jard. Bot. Rio 26172).

Coccocypselum Lyman-Smithii Standl. Field Mus. Bot. 8: 165. 1930.—The original description was based upon a single collection, *Lyman B. Smith* 1464 from Mt. Itatiaya, Brazil. Several additional specimens of this rather sharply differentiated species deserve mention: Umuarama, C. do Jordão, São Paulo, January, 1935, *M. Kuhlmann* 32415. Prov. Minas Geraes, 1816–21, *A. de Saint-Hilaire* D. 537 (ex herb. Paris). Serra do Itatiaia, Rio de Janeiro, June, 1913, *Tamandaré & Brade* 6356 (herb. Inst. Biol. S. Paulo 6787). Itatiaia, Serra da Mantiqueira, alt. 2,300 meters, fruits bluish, *R. W. Kaempfe* 437. Campo Itatiaia, *H. Luederwaldt* 462 (herb. Inst. Biol. S. Paulo 11476). Estado do Rio de Janeiro, Serra dos Orgãos, alt. 2,000 meters, March, 1932, *Brade* 11450 (herb. Mus. Nac. Rio 26160).

Coccocypselum pedunculare Cham. & Schlecht. Linnaea 4: 142. 1829.—This species, although several collections are reported for it in *Flora Brasiliensis*, is rather sparsely represented in herbaria, and the following recent specimens perhaps are worthy of citation: Serra do Itacolomy, Ouro Preto, Minas Geraes, campos humidos, alt. 1,752 meters, flowers blue, in 1939, *José Badini* 3803. Serra do Cipó, km. 140, Minas Geraes, April, 1935, *Mello Barreto* 1136; *Brade* 14740 (herb. Jard. Bot. Rio 27670). Campo, Serra do Cipó, km. 143, estrada do Pilar, Municipio Santa Luzia, Minas Geraes, scarce, flowers violet, February, 1938, *Mello Barreto* 8979 (herb. Jard. Bello Horizonte 26096).

Coccocypselum pumilio Standl. Field Mus. Bot. 8: 346. 1931.—When the species was published, a single collection was known, *Dusén* 13283 from Jaguariahyva, Paraná, Brazil. Two recent collections show that it has a rather wide range: São Paulo, Sto. Amaro, Rio Pinheiro, flowers blue, *A. C. Brade* 12367 (herb. Mus. Nac. Rio 26878). Poços de Caldas, Minas Geraes, January, 1919, cascata, fl. roxa, *F. C. Hoehne* 2761.

Coccocypselum sessiliflorum Standl. Field Mus. Bot. 11: 194. 1936.—Only three collections were known to the writer when this

Brazilian species was described, but three additional ones may now be cited, all from the State of Rio de Janeiro: Sto. Antonio de Imbê, alt. 1,100 meters, *Brade & Santos Lima* 11557. Sta. M. Magdalena, alt. 900 meters, flowers bright blue, March, 1935, *Santos Lima & Brade* 14271 (herb. Jard. Bot. Rio 27685). Serra dos Orgãos, alt. 1,400 meters, berries blue, May, 1931, *Brade* 10780 (herb. Mus. Nac. Rio 24305). The last collection is noteworthy for its subreniform leaves, broadly rounded to almost emarginate at the apex. At first I was inclined to believe that it represented a distinct species, but probably it is best treated as a variant of *C. sessiliflorum.*

Cosmibuena Rhizophorae Standl., sp. nov.—Arbuscula glabra, ramulis fuscescentibus subteretibus crassis longitrorsum rugosis, internodiis brevibus; folia parva petiolata in sicco crasse coriacea, petiolo crasso 5–15 mm. longo; lamina late elliptica usque rotundato-obovata 3–5 cm. longa 2–3.5 cm. lata, apice rotundata vel obtusissima, basi late cuneato-angustata vel obtusa, interdum fere rotundata, supra in sicco fuscescens, costa nervisque obscuris, subtus fere concolor, costa nervisque obsoletis; stipulae oblongo-obovatae ca. 12 mm. longae et 5 mm. latae caducae tenues nervosae obtusae; flores ut videtur terminales et solitarii subsessiles; capsula lineari-oblonga obtuse costata 4.5 cm. longa, apicem basinque versus aliquanto angustata, valvulis ca. 7 mm. latis; coma seminum pallide brunnescens.—Colombia: In mangrove swamp, Buenaventura Bay, Dept. El Valle, April 13, 1939, *E. P. Killip* 34972 (type in Herb. Field Mus.).

The species is noteworthy for its unusually small leaves.

Coussarea caroliana Standl., sp. nov.—Frutex vel arbor 3–6-metralis glabra, trunco usque 9 cm. diam., ramis gracilibus subteretibus viridibus, internodiis plerumque elongatis; stipulae deciduae ante anthesin clausae 12–17 mm. longae, mox uno latere fissae lineares vel lineari-oblongae attenuatae; folia modica breviter petiolata membranacea, petiolo 7–10 mm. longo; lamina elliptica vel elliptico-oblonga 10–14.5 cm. longa 4–7 cm. lata acuta vel breviter acuminata, basi obtusa vel acutiuscula, supra laete viridis, subtus pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 12 tenerrimis subarcuatis angulo lato interdum fere recto abeuntibus prope marginem irregulariter arcuato-conjunctis, venulis obsoletis; inflorescentia terminalis thyrsiformis 4–5 cm. longa basi usque 3 cm. lata laxe pauci- vel multiflora, floribus in cymulas parvas paucifloras umbelliformes sessiles vel inferiores usque 7 mm. longe pedunculatas aggregatis, pedicellis usque 3 mm. longis crassiusculis saepius

fere nullis, bracteis minutis deciduis; hypanthium clavatum fere 2 mm. longum, calyce late campanulato 1.2 mm. longo undulato; corolla alba extus glabra in alabastro apice obtusa, tubo 8–9 mm. longo sursum vix dilatato medio 1.5 mm. lato, lobis ovato-oblongis obtusis 4 mm. longis.—Costa Rica: Suerre, Cantón de San Carlos, Prov. Alajuela, alt. 1,000 meters, March 2, 1939 *Austin Smith* H1645 (type in Herb. Field Mus.). Villa Quesada, Cantón de San Carlos, alt. 840 meters, February 28, 1939, *Austin Smith* H1722.

Concerning the plant the collector supplies the following information: "Growing in deep shade of the Caribbean rain forest. A spreading shrub or a tree with rather broad crown, the bark dark brownish gray, the cambium layer pale buff; leaves faintly shining above; inflorescence fleshy, the corolla 4-lobed, the flowers inodorous. A rather common species here." The species is somewhat similar to *C. impetiolaris* Donn. Smith, also Costa Rican, but in that the leaves are essentially sessile, and the inflorescence is relatively broad, rather than thyrsiform.

Coussarea Colonis Standl., sp. nov.—Frutex, ramis sat gracilibus sparse vel dense sericeis, mox glabratis, internodiis ut videtur elongatis; stipulae deciduae lineari-lanceolatae basi paullo dilatatae sericeae ca. 13 mm. longae erectae; folia inter maxima petiolata tenuiter membranacea, petiolo gracili 2.5–4 cm. longo sparse sericeo; lamina elliptica vel oblongo-elliptica 26–34 cm. longa 12–15.5 cm. lata, apice acutata et subito longeque caudato-acuminata, basi acuta vel prope basin subito contracta et longe decurrens, supra viridis fere glabra sed pilis paucis longis laxisque conspersa, subtus pallidior sparse pilis longis laxis subadpressis albidis sericea, costa gracili elevata, nervis lateralibus utroque latere ca. 13 tenerrimis arcuatis prominentibus angulo lato adscendentibus juxta marginem arcuato-conjunctis, venulis prominulis laxe reticulatis; inflorescentia terminalis cymoso-paniculata 4–9 cm. longa usque 7 cm. lata laxe multiflora ca. 2.5 cm. longe pedunculata, ramis basalibus oppositis vel verticillatis patentibus vel adscendentibus dense sericeis, bracteis lanceolatis vel subulatis parvis sericeis, floribus fere omnibus pedicellatis, pedicellis fere filiformibus usque 8 mm. longis; hypanthium sparse adpresso-pilosum basi obtusiusculum 1.5 mm. longum, calyce campanulari 1.2 mm. longo remote minuteque denticulato; corolla alba in alabastro fere linearis, tubo gracili 11 mm. longo paullo ultra 1 mm. lato extus minutissime puberulo, lobis 5 linearibus in alabastro aliquanto tortis 6–7 mm. longis extus glabris; stamina inclusa.—Panama: Buena Vista, region of Almirante, Prov. Bocas del Toro,

January–March, 1928, *G. Proctor Cooper* 228 (type in Herb. Field Mus.). Buena Vista Camp on Chiriquí Trail, alt. 375 meters, Prov. Bocas del Toro, *Cooper* 585a.

The two collections cited were once determined by the writer as *Coussarea latifolia* Standl., a Costa Rican species to which this is not closely related, and duplicates may be found in other herbaria under that name. *Coussarea Colonis* is quite different from other Central American species in its inflorescence. The flowers are all young, and there is some possibility, in fact, on this account, that the species has not been referred to the proper genus.

A recent collection also appears to represent this species: Panama: Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 10, 1940, *M. E. & R. A. Terry* 1487; a shrub of 2–3 meters, the flowers white or pale cream. This differs from the type in having leaf blades only 4.5–5.5 cm. wide, and smaller flowers, with a corolla tube but 5 mm. long. It is possible that an ampler series of specimens will show that two species are represented, but since all three available collections agree so well in other characters, it is not advisable at present to name a second one.

Coussarea enneantha Standl. Journ. Wash. Acad. Sci. 18: 282. 1928.—The type is *R. S. Williams* 841 from the vicinity of Cana, Panama. There is now available a second collection from the same region: Cana–Cuasi trail, Chepigana District, Prov. Darién, alt. 900 meters, in flower, March, 1940, *M. E. & R. A. Terry* 1476. A shrub of 1.5–3 meters, with cream-colored flowers.

Coussarea Garciae Standl., sp. nov.—Arbuscula 3.5 m. alta, ramulis novellis crassis in sicco subcompressis et longitrorsum striatis glabris, internodiis superioribus brevibus; stipulae non visae; folia inter maxima glabra subsessilia, petiolo crassissimo glabro vix 5 mm. longo; lamina oblongo-obovata ca. 42 cm. longa et 19 cm. lata apice lato abrupte breviterque acutata, basin versus longe sensimque cuneato-angustata, basi ipsa obtusa vel anguste rotundata, supra in sicco cinereo-viridis, costa nervisque prominulis, sublucida, subtus paullo pallidior, costa gracili elevata, nervis lateralibus teneris prominentibus numerosis angulo latiusculo adscendentibus subarcuatis in marginem desinentibus, venulis vix prominulis laxe reticulatis; inflorescentia terminalis cymoso-paniculata densissime multiflora (in statu fructifero tantum visa) breviter pedunculata ca. 6 cm. longa atque 9 cm. lata, floribus plerumque crasse pedicellatis; calyx ad apicem fructus persistens glaber vel glabratus, tubo campanulato 7–8 mm. longo 4–4.5 mm. lato, lobis vulgo 6–7 mm. longis linearibus

sinubus latis sejunctis; fructus albus ellipsoideus ca. 1.5 cm. longus et fere 1 cm. latus basi et apice obtusus glaber.—Colombia: Intendencia El Chocó, Bahía Solano, dense forest along Quebrada Jellita, alt. 50–100 meters, February 22, 1939, *E. P. Killip & Hernando García* 33524 (type in Herb. Field Mus.).

The leaves are the largest found among all the Colombian species of *Coussarea* so far known.

Coussarea janeirensis Standl., sp. nov.—Frutex vel arbuscula glabra, ramis in sicco subcompressis et longitrorsum sulcatis ut videtur viridibus, internodiis elongatis; stipulae persistentes et incrassatae apice rotundatae denique breviter bilobae ca. 4 mm. longae aliquanto tuberculatae; folia modica petiolata papyracea, petiolo 1.2–1.7 cm. longo; lamina obovato-oblonga 11.5–16.5 cm. longa 5–7.5 cm. lata, apice rotundata vel obtusissima et subito breviterque caudato-acuminata, acumine lato obtuso usque 8 mm. longo, basi cuneato-angustata et ad petiolum longius decurrens, supra in sicco opaca, costa basin versus sulcata, nervis non elevatis, subtus paullo pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 9 tenerrimis angulo lato adscendentibus fere rectis versus marginem arcuato-conjunctis, venulis prominulis laxissime reticulatis; inflorescentia terminalis cymoso-corymbosa e basi radiatim ramosa ca. 3.5 cm. longa et usque 5 cm. lata, radiis basalibus 3–4 suberectis crassiusculis, floribus sessilibus vel breviter crasseque pedicellatis dense cymose aggregatis, bracteis minutis et deciduis vel nullis; hypanthium columnare vel sursum paullo crassius glabrum 1.5 mm. longum, calyce late campanulato 1 mm. tantum longo truncato; corolla extus glabra, tubo crasso 4–5 mm. longo sursum sensim dilatato, lobis elliptico-oblongis obtusis vel acutis 3.5–4 mm. longis patentibus intus glabris; antherae semiexsertae, stylo breviter exserto.—Brazil: Morro da Babilonia, Rio de Janeiro, October, 1914, *F. C. Hoehne* 24992 (type in Herb. Field Mus.).

Coussarea locuples Standl., sp. nov.—Arbor mediocris praeter flores omnino glabra, ramulis crassiusculis fusco-brunnescentibus subteretibus, novellis in sicco subcompressis, internodiis plerumque brevibus; stipulae vix ultra 3 mm. longae maturitate incrassatae persistentes, rotundatae vel fere truncatae et breviter subulato-apiculatae, apice vulgo deciduo; folia modica inaequalia tenuiter coriacea petiolata, petiolo crassiusculo 10–14 mm. longo; lamina oblonga vel elliptico-oblonga vulgo 14–16 cm. longa et 5–6 cm. lata sed interdum major, apice obtusa et subito contracta longe caudata, acumine angusto usque 2 cm. longo attenuato, basi late acuta vel subito contracta et breviter decurrens, supra in sicco lucida brunnescens, costa tenera prominente, nervis lateralibus utroque latere ca. 9 arcuatis tenerrimis angulo latiusculo abeuntibus prope marginem arcuato-junctis, venis vix prominulis laxe reticulatis; inflorescentia terminalis sessilis vel breviter pedunculata densiuscule multiflora thyrsoideo-paniculata ca. 6 cm. longa et aequilata basi trichotoma, ramis basalibus usque 2.5 cm. longis, superioribus brevioribus crassis basi nudis vel bracteatis, bracteis parvis vel minutis latis acutatis, floribus dense cymoso-aggregatis sessilibus vel subsessilibus; hypanthium obconico-columnare glabrum 1.5–2 mm. longum, calyce glabro late campanulato 2–2.5 mm. longo remote breviterque dentato, dentibus remotis late triangularibus obtusis interdum apice minute puberulis; corolla alba extus minutissime sparseque puberula vel prope medium fere glabra, tubo gracili 1 cm. longo 2 mm. lato, lobis late linearibus obtusis patentibus 8 mm. longis; stamina inclusa.—Brazil: Inter flumina Jacurapá et Puruité affl. Rio Icá infer., civ. Amazonas, silva non inundabili, October 14, 1931, *A. Ducke* 24419 (type in Herb. Field Mus.).

Coussarea scalaris Standl., sp. nov.—Arbor parva omnino glabra, ramulis novellis in sicco complanatis longitrorsum sulcatis in vivo ut videtur viridibus, internodiis valde elongatis; stipulae plus minusve persistentes incrassatae tuberculatae usque 6 mm. longae late ovatae; folia majuscula breviter petiolata crasse chartacea, petiolo 10–12 mm. longo; lamina oblonga vel anguste oblonga, interdum oblanceolato-oblonga, 11–22 cm. longa 3–9 cm. lata, apice subito sensimve contracta et longe caudata, acumine fere lineari usque 2 cm. longo obtuso, basi acuta vel obtusa, supra in sicco griseoviridis sublucida, costa nervisque prominentibus, subtus pallidior, costa tenera elevata, nervis lateralibus utroque latere usque 17 regulariter parallelis angulo recto divergentibus teneris prominentibus subarcuatis juxta marginem arcuato-junctis, venis elevatis et arcte reticulatis; inflorescentia terminalis sessilis cymoso-paniculata basi triradiata ca. 6 cm. longa et 8 cm. lata, interdum longior, ramis gracilibus in sicco nigris, floribus plerumque umbellato-aggregatis, interdum cymosis, sessilibus vel brevissime crasseque pedicellatis, bracteis nullis, radiis infimis usque 3 cm. longis, superioribus sensim brevioribus divaricatis; hypanthium campanulatum 2–2.5 mm. longum in sicco sulcato-costatum, calyce truncato vix 2 mm. alto; corolla alba extus glabra in alabastro apicem versus sensim angusteque attenuata, tubo crasso 11 mm. longo prope basin ca. 2.5 mm. lato sursum paullo angustato, lobis 5 obtusis linearibus intus minute tomentellis 5–6 mm. longis; antherae inclusae; stylus inclusus fere filiformis glaber 6 mm. longus.—Brazil: Parintins, civ. Amazonas, ultra lacum José-Assú, silva terris altis, December 28, 1935, *A. Ducke* 34996 (type in Herb. Field Mus.).

Coussarea stenocalyx Standl., sp. nov.—Arbor 5.5 m. alta, trunco 1.2–2.5 cm. diam., omnino glabra, ramulis subochraceis, internodiis brevibus; stipulae perfectae non visae, parte basali persistente vaginiformi 2–3 mm. longa; folia modica petiolata membranacea, petiolo gracili 1.5–3 cm. longo; lamina lanceolato-oblonga vel anguste lanceolata 14–19 cm. longa 4.5–6.5 cm. lata longe angusteque attenuato-acuminata, basi acuta vel acutiuscula, supra in sicco vix lucida, costa nervisque prominulis, subtus concolor, costa tenera prominente, nervis lateralibus utroque latere ca. 11 teneris prominulis subarcuatis prope marginem arcuato-conjunctis, venis prominulis laxe reticulatis; inflorescentia terminalis cymoso-corymbosa 1–2.5 cm. longe pedunculata basi triradiata, ramis crassiusculis suberectis, floribus in cymulas umbelliformes trifloras dispositis, pedicellis crassis 3–4 mm. longis; hypanthium cum calyce tubuloso-campanulatum 8–14 mm. longum 3–4 mm. latum basi late rotundatum, dentibus brevibus triangularibus ciliatis; corolla alba fere 3 cm. longa in alabastro longiattenuata, tubo sursum sensim dilatato et fauce 3 mm. lato, lobis linearibus tubo aequilongis apice ut videtur brevissime obtuseque corniculato-appendiculatis.—Colombia: State of Boyacá, Chapón region, alt. 1,080 meters, in dense forest, May 22, 1932, *A. E. Lawrance* 94 (type in Herb. Field Mus.).

Crusea Gentryi Standl. Bot. Ser. Field Mus. 22: 112. 1940.—Of this lately published species there has been received a new collection, extending its known range to a new state of Mexico, the type having come from Sonora: Sinaloa, northwest base of Cerro Colorado, moist, shady slope with *Quercus*, alt. 450 meters, February, 1940, *Howard Scott Gentry* 5473; a widely branched herb with white flower heads.

Declieuxia bouvardioides Standl., sp. nov.—Ut videtur fruticulus, ramosus, ramis subteretibus ochraceis, novellis densissime pilis longiusculis albidis patulis pilosis, internodiis foliis longioribus vel interdum brevioribus; stipulae filiformes usque 3 mm. longae dense patule pilosae; folia parva patentia breviter petiolata crasse membranacea, petiolo 2–2.5 mm. longo dense piloso; lamina ovata vel ovato-elliptica 6–12 mm. longa 3–6 mm. lata acuta vel subacuminata, basi acuta, supra fusco-viridis breviter pilosa, nervis obsoletis, subtus cinerea ubique pilis longis patulis plus minusve intertextis densissime pilosa; inflorescentiae terminales cymosae parvae pauciflorae foliis vix longiores, bracteis parvis foliaceis patentibus, floribus sessilibus vel breviter pedicellatis; hypanthium minutum dense pilosum, sepalis minutis lineari-subulatis; corolla extus dense breviterque pilosa fere 4 mm. longa, tubo gracillimo sursum paullo dilatato, lobis oblongis obtusis patulis tubo duplo brevioribus; fructus carpella subglobosa dense patule pilosula.—Brazil: Minas Geraes, Conselheiro Matta, July, 1934, *A. C. Brade* 24679 (type in Herb. Field Mus.).

Declieuxia Bradei Standl., sp. nov.—Fruticulus dense ramosus dense foliatus, ramis fuscis tetragonis sat dense pilis longiusculis patentibus plurilocularibus hirsuto-villosis, internodiis foliis subaequalibus; stipulae subulatae vel fere filiformes 3–4 mm. longae pilosae; folia parva petiolata coriacea, petiolo gracili saepe marginato 2–4 mm. longo sparse villoso; lamina saepissime ovata, interdum elliptico-ovata, 9–13 mm. longa 4–6 mm. lata obtusa, basi subito angustata, supra fuscescens glabra lucida, costa nervisque valde impressis, sparse ad costam nervosque pilis longis rigidiusculis patulis villosa, costa elevata, nervis obscuris, venis obsoletis, margine solemniter revoluto; inflorescentiae terminales parvae cymoso-aggregatae dense multiflorae vix ad 1 cm. latae bracteatae, bracteis foliaceis lineari-oblongis plerumque 3–4 mm. longis; sepala foliacea oblongo-lanceolata acuta vel acuminata 2.5 mm. longa glabra sed interdum ciliata; corolla caerulea extus glabra 4–4.5 mm. longa, tubo late obconico, lobis subpatulis oblongis obtusis tubo duplo longioribus; fructus glaber didymus, coccis globosis fere 2 mm. altis.—Brazil: Estado do Rio de Janeiro, Sta. Magdalena, Alto do Desengano, alt. 2,000 meters, March 5, 1934, *Santos Lima & A. C. Brade* 15553 (Herb. Inst. Biol. Veg. 24606; type in Herb. Field Mus.).

Declieuxia calophylla Standl., sp. nov.—Frutex ut videtur sparse ramosus glaberrimus, ramis crassis, vetustioribus brunneo-ochraceis teretibus, novellis in sicco fuscis lucidis plus minusve striato-angulatis, internodiis foliis subaequilongis vel interdum longioribus; setae stipulares erectae vix ultra 2 mm. longae; folia majuscula crasse coriacea sessilia latissime elliptica vel subrotundata 2–4 cm. longa 1.2–3.5 cm. lata, apice rotundata et subito acuminato-apiculata, basi rotundata vel obtusissima, in sicco fusca lucida, costa nervisque utrinque prominentibus et conspicuis, subtus vix pallidiora dense minute pallido-punctata, costa crassiuscula, nervis lateralibus utroque latere ca. 7 regularibus arcuatis, omnibus prope apicem et juxta marginem arcuato-conjunctis, venis occultis; inflorescentiae terminales cymoso-paniculatae dense multiflorae usque 4.5 cm.

longae et aequilatae sessiles, floribus sessilibus vel brevissime pedicellatis plus minusve secundis, bracteis parvis oblongo-linearibus vix ultra 2 mm. longis; sepala minuta fere obsoleta; corolla ca. 6 mm. longa, tubo gracillimo sursum paullo sensim dilatato, lobis oblongo-ovatis vix ultra 1 mm. longis obtusis vel acutiusculis; antherae lineares breviter exsertae; fructus lucidus, coccis valde compressis 2.5 mm. longis.—Brazil: State of Minas Geraes, Serra do Cipó, km. 131, April 14, 1935, *H. Mello Barreto & A. C. Brade* 14738 (herb. Jard. Bot. Rio 27668; type in Herb. Field Mus.).

The species is marked by the broad, almost orbicular, very coriaceous and lustrous leaves, whose nerves are beautifully curved, parallel, and conspicuous, almost rib-like, in fact.

Declieuxia diantheroides Standl., sp. nov.—Fruticulus ramosus 30 cm. altus et ultra, ramis sat gracilibus teretibus ubique dense hirtello-puberulis, internodiis foliis subaequalibus vel saepe longioribus; stipulae e basi late dilatata subulatae 1–2 mm. longae rigidae erectae persistentes hirtellae; folia modica breviter petiolata membranacea, petiolo 2–3 mm. longo hirtello saepe fere ad basin marginato; lamina lanceolata vel lanceolato-elliptica 1.5–2.5 cm. longa 4–10 mm. lata acuminata, basi cuneato-acuta, margine valde revoluto, supra in sicco fusca sublucida puberula, nervis obscuris, costa vix prominula, subtus multo pallidior dense breviter patulo-pilosula, costa tenui prominente, nervis lateralibus utroque latere ca. 5 teneris arcuatis angulo semirecto adscendentibus, venis obsoletis; flores parvi in cymulas parvas axillares dense paucifloras longipedunculatas saepe secundifloras dispositi, sessiles vel breviter pedicellati, cymulis vix ultra 5 mm. latis, pedunculis gracilibus rigidis usque 12 mm. longis solitariis, bracteis anguste linearibus puberulis ad 3 mm. longis; hypanthium minutum puberulum, calyce brevissimo minute obscure dentato; corolla alba in alabastro tantum visa ca. 2.5 mm. longa extus minute hirtella apice obtusa, lobis latis ut videtur tubo subaequilongis; fructus (maturus?) ca. 2 mm. latus ad tertiam partem emarginatus, coccis suborbicularibus lateraliter aliquanto compressis minute hirtellis.—Brazil: Minas Geraes, Conselheiro Matta, June, 1934, *A. C. Brade* 13848 (herb. Jard. Bot. Rio 24680; type in Herb. Field Mus.).

Declieuxia minutifolia Standl., sp. nov.—Fruticulus dense intricateque ramosus 14 cm. altus vel ultra, ramis vetusioribus crassis sordide ochraceis, internodiis abbreviatis, novellis dense hirtellis sat dense foliatis; stipulae minutae subulatae; folia parva opposita subsessilia ut videtur aliquanto carnosa vel in sicco coriacea 2–4 mm. longa fere clavata vel lineari-oblonga vel anguste spathulato-oblonga obtusissima vel apice rotundata, basi acuta vel attenuata, ubique dense hirtella, marginibus plus minusve revolutis; flores axillares sessiles; fructus dense hirtellus, coccis compressis orbicularibus ca. 1.3 mm. latis.—Brazil: Minas Geraes, Diamantina, June, 1934, *A. C. Brade* 13840 (herb. Jard. Bot. Rio 24689; type in Herb. Field Mus.).

Noteworthy for the very small, somewhat crowded, densely pubescent leaves, and the solitary, sessile flowers.

Duroia genipifolia Standl. & Steyerm., sp. nov.—Frutex, ramulis crassis glabris ochraceis teretibus, cortice tenui exfoliante, basibus crassis petiolorum brevibus persistentibus, internodiis brevissimis; stipulae deciduae fere 1 cm. longae lanceolatae subulato-attenuatae rigidiusculae dense pilosae; folia magna breviter petiolata membranacea, petiolo crassiusculo ca. 1.5 cm. longo dense piloso; lamina obovato-oblonga vel oblanceolato-oblonga 20–29 cm. longa 8–10.5 cm. lata acuminata, acumine subfalcato acute acuminato, basin versus longe sensimque angustata, basi ipsa acuta, supra in sicco fusca sublucida sparse pilis brevibus pallidis hirtella, tactu aspera, costa nervisque manifestis sed non elevatis, subtus concolor ubique sat dense pilis brevibus albidis patulis pilosa, costa tenera prominente, nervis lateralibus utroque latere ca. 16 teneris prominentibus subarcuatis angulo lato abeuntibus prope marginem arcuato-junctis, venis paucis prominulis laxe reticulatis; flores masculi ad apicem rami dense capitato-congesti numerosi sessiles vel breviter pedicellati, bracteis subulatis calyce brevioribus; calycis tubus campanulatus 5–6 mm. longus dense hispidulus truncatus, lobis 5 subulatis erectis hispidulis inaequalibus usque 8 mm. longis; corolla in alabastro ca. 18 mm. longa longissime angusteque attenuata extus dense albido-strigosa, tubo ca. 2.5 mm. crasso, lobis 5 in alabastro apice liberis lineari-attenuatis tubo brevi triplo longioribus et ultra.—Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up river, on north side (right side going up river), at sea level, April 14, 1940, *Julian A. Steyermark* 39382 (type in Herb. Field Mus.).

"Leaves subcoriaceous, dark, dull green and rugose above, dull, paler green beneath." From Central (and North) America but a single species of this genus has been recorded, *D. costaricensis* Standl., of the Costa Rican highlands, the few other members of the genus being inhabitants chiefly of the Amazon Valley. In *D. costaricensis* the leaves are hirsute, in *D. genipifolia* merely short-pilose.

Elaeagia glomiflora Standl. Field Mus. Bot. 7: 281. 1931.—The only specimen available when the species was published was the type, collected in Bolivia by Pearce. A recent specimen from Bolivia well represents the species: Dept. La Paz, Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750–900 meters, July, 1939, in fruit, a tree of 9 meters, *B. A. Krukoff* 10366.

Faramea mattogrossensis Standl., sp. nov.—Frutex vel arbuscula glabra, ramis gracilibus teretibus ochraceis, internodiis brevibus; stipulae fere liberae 2.5 mm. longae latissimae apice rotundatae et in mucronem rigidum erectum subulatum 3 mm. longum contractae; folia parva breviter petiolata pergamentacea, petiolo crasso 5–6 mm. longo; lamina elliptico-oblonga vel obovato-oblonga 8.5–9.5 cm. longa 3–4 cm. lata acuta vel subacuminata, basi cuneato-acuta et breviter decurrens, supra in sicco fusca opaca, costa nervisque non elevatis, subtus paullo pallidior brunnescens, costa tenera prominente, nervis lateralibus utroque latere ca. 9 angulo lato divergentibus tenerrimis prominulis, venis fere obsoletis; inflorescentia terminalis sessilis cymoso-paniculata basi triradiata ca. 4 cm. longa et 6 cm. lata sat dense multiflora, radiis basalibus usque 2 cm. longis, floribus sessilibus capitatim aggregatis, bracteis lanceolatis longiattenuatis ca. 3 mm. longis persistentibus; calycis tubus campanulatus 2 mm. longus, lobis anguste triangulari-subulatis usque 3 mm. longis erectis; corolla in alabastro angustissima apicem versus longe attenuata, tubo angusto 6 mm. longo, lobis lineari-attenuatis ca. 7 mm. longis. Brazil: Rio Arinos, Matto Grosso, arbusto de galhos finos flexiveis, fl. roseas, December, 1914, *F. C. Hoehne* 1482 (Commissão Rondon; type in Herb. Field Mus.).

Faramea planitiarum Standl., sp. nov.—Frutex bimetralis omnino glaber, ramis gracilibus aliquanto complanatis, internodiis superioribus 7.5–12 cm. longis; stipulae deciduae, non visae; folia mediocria fere sessilia rigide membranacea, petiolo crasso vix ad 4 mm. longo; lamina anguste oblonga 12.5–15 cm. longa 4–5 cm. lata subito caudato-acuminata, acumine angusto attenuato acuto, basi anguste rotundata, supra in sicco viridis lucida, costa prominente, nervis prominulis, subtus paullo pallidior, costa tenera elevata, nervis lateralibus utroque latere ca. 14 angulo recto divaricatis tenerrimis fere rectis prominentibus juxta marginem arcuato-conjunctis, venulis prominentibus arcte reticulatis; inflorescentia terminalis laxe cymoso-paniculata sessilis multiflora 11 cm. longa 16 cm. lata basi triradiata, radiis basalibus usque 3.5 cm. longis, floribus plerumque in cymulas laxas trifloras dispositis, bracteis minutis triangulari-attenuatis inconspicuis, pedicellis gracilibus usque 4 mm. longis; hypanthium obconico-obovoideum vix 1 mm. longum, calyce annulari vix 0.4 mm. alto undulato vel truncato; corolla intense caerulea extus glabra in alabastro apice acutiuscula vel obtusa, tubo crasso 5 mm. longo sursum paullo dilatato, lobis 4 subpatentibus lanceolato-oblongis 3 mm. longis intus minutissime papillosis obtusis; antherae breviter exsertae lineares 2 mm. longae.—Colombia: Comisaría El Vichada, Los Llanos, in rather open forest along Río Vichada, near San José de Ocune, alt. about 100 meters, May 4, 1939, *Oscar Haught* 2809 (type in Herb. Field Mus.).

Faramea stenodon Standl., sp. nov.—Arbor gracilis 6-metralis saltem in statu fructifero omnino glabra, ramulis in sicco fusco-olivaceis, internodiis elongatis; stipulae deciduae, non visae; folia mediocria breviter petiolata firme membranacea, petiolo ca. 8 mm. longo; lamina anguste elliptico-oblonga vel oblanceolato-oblonga 13–17.5 cm. longa 4–6 cm. lata, apice acutiuscula et subito caudata, acumine lineari usque 2 cm. longo, basi cuneato-acuta, supra in sicco opaca, costa prominente, nervis manifestis sed vix elevatis, subtus concolor, costa tenera prominente, nervis lateralibus utroque latere ca. 17 teneris subarcuatis angulo lato interdum fere recto divergentibus prope marginem in nervum collectivum crenatum conjunctis, venulis prominulis laxe reticulatis; inflorescentia terminalis 4.5 cm. longe pedunculata erecta corymbiformis in statu fructifero 3 cm. longa et 6.5 cm. lata laxe pauciflora e basi 4-radiata, pedicellis crassis 5–8 mm. longis ad apices ramulorum umbellatis; fructus depresso-globosus laevis ca. 6 mm. altus et 10 mm. latus; sepala ad apicem fructus persistentia lineari-subulata 2–2.5 mm. longa.—Colombia: Intendencia del Chocó, La Concepción, 15 km. east of Quibdó, alt. 75 meters, April–May, 1931, *W. A. Archer* 2098 (type in Herb. Field Mus.).

The rather handsome leaves are practically 3-nerved because of the well developed collective nerve close to the margin. The extremely narrow calyx lobes are an unusual character in the genus.

Faramea stenomeris Standl., sp. nov.—Frutex omnino glaber, ramis gracilibus teretibus viridescentibus, internodiis plerumque 2.5–5 cm. longis; stipulae fere liberae persistentes et plus minusve induratae subrotundae vix ultra 1 mm. longae, apice abrupte in setulam rigidam 1 mm. longam vel paullo ultra contractae; folia parva sessilia coriacea in sicco lutescentia lanceolato-linearia 5–8 cm. longa 5–12 mm. lata apicem angustum fere subulatum versus longe angusteque attenuata, basin acutam versus breviter angustata, basi ipsa acuta, supra viridia, costa pallida prominente, nervis vix elevatis, subtus multo pallidiora, costa gracili prominente, nervis lateralibus manifestis sed non elevatis brevibus angulo lato divergentibus irregularibus, venis obsoletis, margine insigniter cartilagineo-incrassato pallido; inflorescentia terminalis breviter pedunculata subumbellatim 3–5-flora, bracteis nullis, pedicellis gracilibus rigidis ca. 13 mm. longis lutescentibus; hypanthium in sicco angulatum 1.5 mm. longum, calyce campanulato 1.5 mm. longo angulato, dentibus triangulari-subulatis remotis rigidis vix 0.6 mm. longis erectis; corolla alba extus glabra, tubo tenui ca. 15 mm. longo sursum paullo sensim dilatato et 1.2 mm. lato, lobis lineari-lanceolatis longiattenuatis 10 mm. longis patentibus; fructus globosus laevis 8 mm. diam. basi et apice late rotundatus.—Brazil: Rio Tapajoz, S. Gabriel, mata, aparece em todas as cacheiras, January, 1915, *J.G. Kuhlmann* 1462 (Commissão Rondon; type in Herb. Field Mus.).

The leaves are unusual, being narrow and somewhat suggestive of the genus *Salix*, and with conspicuous, pale, cartilaginous margins.

Faramea Terryae Standl., sp. nov.—Frutex 2–2.5 m. altus glaber, ramis gracilibus subteretibus viridibus, internodiis plerumque 3–4.5 cm. longis; stipulae in tubum 2.5 cm. longum 2.5–3 mm. latum connatae, tubo basi circumscisso et uno latere fisso caduco, apice utroque latere lobis 2 ca. 5 mm. longis subulatis aucto; folia inter minora breviter petiolata membranacea, petiolo crassiusculo 3–4 mm. longo; lamina anguste lanceolato-oblonga 11–12.5 cm. longa 2.5–3.5 cm. lata abrupte longe angusteque attenuato-acuminata, acumine fere lineari ca. 1.5 cm. longo, basi acuta, supra in sicco laete viridis sublucida, costa prominente, nervis venisque prominulis, subtus fere concolor, costa tenera prominente, nervis lateralibus utroque latere ca. 23 tenerrimis prominulis angulo lato divergentibus prope marginem in nervum irregularem collectivum conjunctis, venis paucis obscuris laxe reticulatis; inflorescentia terminalis umbellata capituliformis pauciflora 2.5 cm. longe pedunculata erecta basi bracteis 2 foliaceis viridibus et bracteis 2 interioribus ut videtur pallidis multo brevioribus fulcrata; bracteae exteriores rotundo-ovatae fere 2.5 cm. longae abrupte longeque caudato-acuminatae, interioribus tenuibus vix ultra 1 cm. longis; flores breviter pedicellati; hypanthium late obovoideum 1.5 mm. longum, calyce annuliformi ca. 0.6 mm. alto truncato remote minuteque denticulato.—Panama: Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 10, 1940, *M. E. & R. A. Terry* 1479 (type in Herb. Field Mus.).

The form of the inflorescence is unlike that of any other Central American *Faramea*, especially in the two pairs of large bracts that completely hide the flowers. The long and narrow stipule sheath also is peculiar. Only a single inflorescence is available for examination, and it is not in satisfactory condition for study.

Ferdinandusa chlorantha (Wedd.) Standl. Trop. Woods 34: 41. 1933. *Gomphosia chlorantha* Wedd. Ann. Sci. Nat. III. 10: 14. 1848.—This species has been collected several times in Peru, whence it was originally described. Two recent collections attest its presence in Brazil: State of Amazonas, Municipality São Paulo de Olivença, basin of Belem Creek, October–December, 1936, a tree 15 meters high, the trunk 10 cm. in diameter, terra firma, high forest, *B. A. Krukoff* 8912. Porto Velho, Rio Madeira, civ. Amazonas, silva non inundabili, arbor parva, flor. viridialbis, June, 1936, *A. Ducke* 35057. The second collection was once determined by the writer as a new species, and assigned a name under which specimens may have been distributed to other herbaria. Further study shows that the tree represented is inseparable from *F. chlorantha.*

Ferdinandusa guainiae Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 211. 18889.—A new collection of this rare tree is worthy of report: Brazil: Rio Curucuriary affl. Rio Negro, civ. Amazonas, ad ripas inundatas, arbor parva, flor. albis, December, 1931, *A. Ducke* 24374.

Ferdinandusa hirsuta Standl. Field Mus. Bot. 8: 158. 1930.—The species was based upon a single collection, *Killip & Smith* 30159 from Manáos, Brazil. More recently a second collection has come to hand, from the same region: Manáos, silva non inundabili prope cataractam maiorem fluminis Tarumá, arbuscula, flor. albis, July, 1937, *A. Ducke* 543.

Ferdinandusa leucantha Standl., sp. nov.—Arbor parva omnino glabra, ramulis crassis teretibus, internodiis brevibus; stipulae caducae fere hyalinae pallide brunnescentes late ovatae obtusae ca. 14 mm. longae; folia magna petiolata firme pergamentacea, petiolo crassiusculo 3–4 cm. longo; lamina elliptico-oblonga usque obovato-elliptica 19–25 cm. longa 8–11 cm. lata, apice obtusissima vel subrotundata et subito in acumen triangularem paullo ultra 1 cm. longum contracta, basi acuta vel abrupte contracta, supra in sicco sublucida fuscescens vel brunnescens, costa nervisque perspicuis sed vix elevatis, subtus vix pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 12 teneris prominentibus angulo latiusculo adscendentibus fere rectis juxta marginem subito sursum curvatis; inflorescentia terminalis sessilis paniculata corollis exclusis ca. 3 cm. longa et 2 cm. lata laxe pauciflora, pedicellis rigidis crassiusculis 5–15 mm. longis; hypanthium breve in pedicellum sensim angustatum, calyce fere annuliformi vix ultra 1 mm. alto truncato; discus elevatus et subtumidus; corolla alba glabra, tubo crassiusculo 2 cm. longo prope medium paullo ultra 2 mm. lato, fauce vix dilatato, lobis 5 patentibus anguste oblongo-lanceolatis tubo aequilongis.—Brazil: Esperança ad ostium fluminis Javary, civ. Amazonas, silva non inundabili, September 20, 1931, *A. Ducke* 24388 (type in Herb. Field Mus.).

The genus to which this small tree has been referred is not an altogether satisfactory disposition of it, but no better place can be found until the fruit is known. If really referable to *Ferdinandusa,* it is quite distinct from all other Brazilian species, particularly in shape of the corolla.

Gonzalagunia bracteosa (Donn. Smith) Robinson, Proc. Amer. Acad. 45: 405. 1910. *Gonzalea bracteosa* Donn. Smith, Bot. Gaz. 33: 252. 1902.—When the account of the genus *Gonzalagunia* (under the name *Duggena*) was published in *North American Flora* (32: 133. 1921), only the type collection of this well marked species was known, *J. D. Smith* 6583 from Suerre, Llanuras de Santa Clara, Costa Rica, at 300 meters. In the same country *G. bracteosa* has been collected at various localities in the Atlantic lowlands, and very recently it has been found also in Panama. The following collections are worthy of citation: Panama: Cana–Cuasi trail, Camp 1, Chepigana District, Prov. Darién, alt. 240 meters, March, 1940, *M. E. & R. A. Terry* 1621; a shrub of 1–2 meters, the flowers white.—Costa Rica: Villa Quesada, Cantón de San Carlos, Prov. Alajuela, alt. 625–825 meters, March, 1939, *Austin Smith* F1766, F1770, F1820. Mr. Smith's notes supply the following information: In Caribbean rain forest; a slender shrub of 2–4 meters, the bark light brown; calyx green, with brown tomentum.

Hamelia pedicellata Wernham, Journ. Bot. 49: 212. 1911.—Many of the species of *Hamelia* are nearly related and not too sharply separable. This one, which has a wide distribution in Venezuela and Colombia, is closely related to *H. patens* Jacq. and *H. nodosa* Mart. & Gal., differing principally in the well developed pedicels, those of the two species mentioned being very short or none. *Hamelia pedicellata* has not been known heretofore from North America, but the following collection seems clearly referable to it:

Panama: Tucuti, Chepigana District, Prov. Darién, at sea level, March, 1940, *M. E. & R. A. Terry* 1406; a shrub of 2.5–3.5 meters, the flowers orange or orange-scarlet.

Hillia Ulei Krause, Verh. Bot. Ver. Brandenb. 50: 97. 1908.—Heretofore the species has been known only from Loreto, Peru, but its range is now shown to extend to the eastern lowlands of Bolivia: Dept. La Paz, Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750 900 meters, "vine," July, 1939, *B. A. Krukoff* 10171.

Hoffmannia Steyermarkii Standl., sp. nov.—Frutex subephyticus omnino glaber ut videtur sparse ramosus, ramis viridibus subteretibus laevibusque, internodiis plerumque 4–7 cm. longis; stipulae valde reductae fere annuliformes brevissimae; folia modica ternata longiuscule petiolata membranacea, petiolo gracili 1–2.5 cm. longo superne anguste alato; lamina lineari-oblanceolata vel angustissime oblongo-oblanceolata vulgo 9–15 cm. longa et 1.2–2.5 cm. lata, longe angusteque attenuato-acuminata, apice ipso subobtuso, basin versus longe angusteque attenuata et longe decurrens, supra viridis laevis, costa manifesta sed non elevata, nervis obsoletis vel obscuris, subtus pallidior, costa pallida prominula, nervis lateralibus utroque latere ca. 8 obscuris arcuatis angulo lato fere recto adscendentibus, venis omnino occultis; inflorescentiae axillares sessiles cymosae laxe pauciflorae usque 3 cm. longae, floribus pedicellatis vel pro parte sessilibus, pedicellis usque 5 mm. longis; hypanthium oblongo-turbinatum 2.5 mm. longum basi contractum; calyx vix 1 mm. longus 2–2.5 mm. latus remote brevissime 4-dentatus, dentibus latissime triangularibus latioribus quam longis obtusis; corolla glabra, tubo crasso 4 mm. longo inferne 2 mm. lato faucem versus paullo sensimque dilatato, lobis 4 rotundo-obovatis apice late rotundatis 5 mm. longis vel paullo ultra; antherae subexsertae; bacca globosa 6–7 mm. diam.; semina numerosa irregularia ca. 1 mm. diam. angulata fusco-brunnea profunde punctata et reticulata.—Guatemala: Dept. San Marcos, between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, February 22, 1940, *Julian A. Steyermark* 36426 (type in Herb. Field Mus.).

"A shrubby epiphyte, growing from the base of a tree trunk on forested slopes of the barranco of Río (Tonaná) Suchaté. Leaves firmly membranaceous, dark, dull green above, silvery, pale green beneath. Flowers pendent. Calyx pale green. Pedicels pale green, tinged with rose. Corolla pale rose, the anthers buff whitish, the stigma whitish." The affinity of this species is with *Hoffmannia cryptoneura* Standl., described from Mt. Ovando, Chiapas. Both agree in having faint, almost obsolete lateral leaf nerves and obsolete veins. The leaves of *H. cryptoneura* are relatively much wider than those of the Guatemalan plant, the calyx lobes are rather well developed and narrow, and the corolla lobes are almost linear.

Machaonia martinicensis (DC.) Standl., comb. nov. *Tertrea martinicensis* DC. Prodr. 4: 481. 1830. *Schiedea martinicensis* A. Rich. Mém. Soc. Hist. Nat. Paris 5: 186. 1834. *Machaonia rotundata* Griseb. Fl. Brit. W. Ind. 348. 1861.

In *North American Flora* (32: 222. 1934) the writer listed *Tertrea martinicensis*, the type of the genera *Tertrea* DC. (1830) and *Schiedea* A. Rich. (1834; non Schlecht. & Cham., 1826) at the end of the genus *Machaonia*, as an undetermined species of that group. No material had been seen of the Martinique plant, which had not been placed definitely by other writers after its original publication. Apparently the plant has not appeared in recent Martinique collections, but there is now in the Herbarium of Field Museum a photograph and fragment of the type from the Richard Herbarium, received by Field Museum from the Muséum d'Histoire Naturelle of Paris. Comparison of this authentic material with the available specimens of *Machaonia rotundata*, reveals no differences, and the new name cited above therefore seems necessary. The species is known at present also from Jamaica, Costa Rica, and Panama.

Machaonia martinicensis var. **Dodgei** (Standl.) Standl., comb. nov. *Machaonia rotundata* var. *Dodgei* Standl. Bot. Ser. Field Mus. 18: 1326. 1938.

Morinda hoffmannioides Standl., sp. nov.—Frutex gracilis 2–3-metralis, ramis subteretibus in sicco fuscis minutissime puberulis vel fere glabris, internodiis superioribus 2–3 cm. longis; stipulae persistentes fere semiorbiculares 3 mm. longae muticae; folia magna petiolata membranacea, petiolo gracili 1.5–3.5 cm. longo microscopice puberulo superne alato; lamina oblongo-elliptica vel lanceolato-oblonga vulgo 20–25 cm. longa et 6–8 cm. lata acuminata, basin versus angustata vel saepius subabrupte contracta et longe decurrens, supra in sicco fusco-viridis glaberrima sublucida, costa nervisque prominulis, subtus paullo pallidior saltem ad costam nervosque microscopice puberula, costa crassa prominente, nervis lateralibus utroque latere ca. 15 teneris prominulis angulo lato adscendentibus arcuatis prope marginem arcuato-conjunctis, venis vix obviis laxe

reticulatis; flores ut dicitur albi capitati, capitulis axillaribus solitariis brevissime crasseque pedunculatis densissime multifloris ante anthesin ca. 7 mm. latis, floribus arcte sessilibus; calyx cum hypanthio vix 1 mm. longus truncatus microscopice puberulus; corolla in alabastro obtusa ca. 2 mm. longa (ad anthesin multo longior?) minute puberula; capitula fructifera paucicarpellata ca. 1 cm. diam., fructu apice profunde depresso, pyrenis plus minusve compressis apice subtruncatis et emarginatis.—Colombia: Intendencia El Meta, Los Llanos, flood plain of Río Negrito, 70 km. east of Villavicencio, December 24, 1939, *Oscar Haught* 2485 (type in Herb. Field Mus.).

There is some doubt that the plant here described really is a species of *Morinda*, but it agrees better with that genus than with any other that has been considered. From other species occurring in South America it differs conspicuously in its large, thin leaves, and especially in the small, almost sessile heads with but few fruits, which, when dried, are coherent only at the base.

Palicourea boyacana Standl., sp. nov.—Frutex 3.5 m. altus, trunco 10 cm. diam., praeter corollas et paginam inferiorem foliorum ut videtur omnino glaber, ramulis gracilibus in sicco fusco-brunnescentibus subteretibus, internodiis valde elongatis; stipulae erectae ca. 5 mm. longae fere ad basin bilobae, lobis latissime ovatis obtusis approximatis; folia majuscula petiolata firme chartacea, petiolo gracili ca. 3.5 cm. longo; lamina elliptica 18 cm. longa 9 cm. lata subito breviterque acuminata, basi acuta, subtus paullo pallidior in sicco fusco-brunnescens, sparsissime minuteque strigillosa vel fere glabra, costa gracili elevata, nervis lateralibus utroque latere ca. 20 arcuatis tenerrimis prominentibus in marginem desinentibus, venulis laxe reticulatis; inflorescentia ampla terminalis sessilis cymoso-paniculata et corymbiformis, e basi triradiata, ca. 11 cm. longa et 19 cm. lata laxe multiflora, ramis infimis angulo semirecto adscendentibus, ramis omnibus basi bracteatis, bracteis patentibus ovatis acutiusculis usque 5 mm. longis, pedicellis rigidiusculis plerumque 4–7 mm. longis; hypanthium 2 mm. longum glabrum basi con pedicello articulatum fere 2 mm. latum, sepalis fere liberis latissime ovatis vix ad 1.5 mm. longis acutatis ciliolatis; corolla aurantiaca in alabastro obtusissima, extus sparse minute puberula ca. 28 mm. longa, tubo crassiusculo sursum paullo dilatato basi uno latere paullo dilatato, lobis oblongo-ovatis obtusis ca. 5 mm. longis intus puberulis.—Colombia: Chapón region, State of Boyacá, dense edge of forest, alt. 1,350 meters, June 3, 1932, *A. E. Lawrance* 154 (type in Herb. Field Mus.; duplicate in U. S. Nat. Herb.).

Palicourea Duckei Standl., sp. nov.—Arbor parva, inflorescentiis rubris, floribus rubroviolaceis, ramulis crassis glabris subteretibus, internodiis ut videtur elongatis; stipularum vagina brevissima, lobis utroque latere 2 remotis triangularibus acutis puberulis 5 mm. longis; folia magna breviter petiolata membranacea, petiolo crasso pilosulo 12 mm. longo; lamina oblongo-elliptica ca. 19 cm. longa atque 8 cm. lata (vel multo major?) subabrupte acuminata, acumine attenuato, basi acuta, supra in sicco sublucida fusca glabra, subtus fere concolor, densiuscule pilis laxis patentibus brevibus pilosa, costa gracili elevata, nervis lateralibus utroque latere ca. 16 teneris angulo lato adscendentibus subarcuatis marginem fere attingentibus; inflorescentia terminalis magna anguste thyrsiformis 8 cm. longe pedunculata ca. 18 cm. longa et prope basin 6 cm. lata, sat dense multiflora, ramis primariis omnibus abbreviatis et vix ultra 1 cm. longis basi bracteatis, bracteis anguste triangularibus acutis vel subobtusis usque 5 mm. longis puberulis, ramis dense breviter patulo-pilosis, floribus fere omnibus pedicellatis, pedicellis crassiusculis usque 4 mm. longis sed saepius brevioribus dense pilosis; hypanthium crasse columnare 1–1.5 mm. longum dense pilosulum; calyx annuliformis vix 1 mm. longus puberulus, margine obscure undulato-lobulato; corolla in alabastro apice obtusissima glabra vel tantum prope basin apicemque minute puberula fere 2 cm. longa, tubo crasso sursum paullo dilatato et 4 mm. lato, basi paullo dilatato, lobis late ovatis obtusis erectis 2.5 mm. longis.—Brazil: Manáos, Colonia Campos Salles, silva secundaria non inundabili, October 5, 1927, *A. Ducke* 23092 (type in Herb. Field Mus.).

It is strange that a *Palicourea* from a region so often visited by collectors has not received a name, and perhaps it has, but I have been unable to associate the type with any of the very numerous species of the Amazon Valley.

Palicourea Garciae Standl., sp. nov.—Arbuscula 5-metralis, ramis nodosis crassiusculis viridibus subteretibus tantum ad nodos sordido-puberulis aliter glabris, internodiis brevibus; stipulae latae 3 mm. tantum longae apice breviter bilobae, lobis approximatis obtusis; folia parva breviter petiolata membranacea, petiolo 4–7 mm. longo glabro; lamina elliptica vel obovato-elliptica 4.5–8 cm. longa 2–3.5 cm. lata subito caudato-acuminata, acumine angusto obtuso, basi acuta, supra in sicco opaca fusca, costa prominente, nervis obscuris, subtus pallidior ad costam nervosque hispidula vel villosula, aliter glabra, costa tenera prominente, nervis lateralibus utroque latere ca. 16 tenerrimis angulo fere recto divergentibus in marginem desinentibus, venis obsoletis; inflorescentia terminalis sessilis laxe cymoso-paniculata multiflora usque 7 cm. longa et 10 cm. lata basi triradiata, radiis basalibus usque 3 cm. longis, ramis sparse hispidulis vel fere glabris rectis gracilibus, bracteis parvis inconspicuis triangulari-subulatis, pedicellis glabris usque 2 mm. longis saepe nullis; hypanthium glabrum crassum 1 mm. longum, calyce 1 mm. longo viridi profunde lobato, lobis inaequalibus ovali-ovatis apice rotundatis vel obtusissimis glabris; corolla lutescens 9 mm. longa glabra, tubo crasso basi manifeste uno latere dilatato medio 2 mm. crasso, lobis obtusis suberectis ca. 2 mm. longis; stamina inclusa; fructus oblongus basi et apice obtusus glaber 5 mm. longus 3 mm. latus, pyrenis grosse costatis.—Colombia: Dense forest, Dept. El Valle, San Antonio, west of Cali, near summit of Cordillera Occidental, alt. 1,900–2,350 meters, February–March, 1939, *E. P. Killip & Hernando García* 33660 (type in Herb. Field Mus.).

Palicourea Mello-Barretoi Standl., sp. nov.—Frutex, ramis teretibus lutescentibus infra nodos sparse breviterque hirtellis vel fere glabris; vagina stipularis brevissima truncata, lobis remotis rigidis erectis subulatis 3–4 mm. longis persistentibus; folia inter minora brevissime petiolata coriacea, petiolo crasso vix ad 2 mm. longo, interdum nullo; lamina oblonga vel ovali-oblonga 3–6 cm. longa 1.5–3 cm. lata, apice rotundata vel obtusa atque apiculata, basi obtusa vel subrotundata, supra lutescenti-viridis dense scabro-pilosula, costa nervisque prominulis, subtus concolor dense hirtello-pilosula, tactu aspera, costa crassa elevata, nervis lateralibus utroque latere ca. 9 elevatis arcuatis angulo ca. semirecto adscendentibus marginem attingentibus, venis paucis prominulis laxe reticulatis; inflorescentia terminalis 2.5 cm. longe vel ultra pedunculata cymosa et fastigiato-ramosa 2.5 cm. longa et aequilata vel major densissime multiflora, e basi ut videtur 3- vel pluriradiata, ramis omnibus basi bracteatis dense fulvo-hirtellis, bracteis parvis inconspicuis triangulari-subulatis 1–3 mm. longis hirtellis, floribus sessilibus vel breviter crasseque pedicellatis; hypanthium columnare luteo-hirtellum vix ultra 1 mm. longum, calyce vix 1 mm. longo hirtello breviter inaequaliter lobato, lobis late ovatis apiculatis; corolla 8 mm. longa extus dense luteo-hirtella in albastro apice obtusissima, tubo gracili vix 1 mm. lato sursum paullo dilatato, lobis obtusis brevissimis.—Brazil: Cerrado, Estrada de Brejo das Almas, Municipio Montes Claros, Minas Geraes, November 9, 1938, *H. Mello Barreto* 12018 (*F. Markgraf* 3148; herb. Jard. Bot. Bello Horizonte 28151; type in Herb. Field Mus.).

"Inflorescence vermillion; flowers orange." The nearest relative of *P. Mello-Barretoi* is *P. coriacea* (Cham.) Schum., a rather common Brazilian plant, which differs in having abundant, large, somewhat foliaceous bracts in the inflorescence. The leaves of the two species are much alike.

Palicourea Mexiae Standl., sp. nov.—Ramuli crassi sparse breviterque pilosi; stipulae fere 1 cm. longae subfoliaceae profunde bilobae extus dense adpresso-pilosulae, lobis latis approximatis apice obtusis vel rotundatis; folia inter maxima breviter petiolata crasse membranacea, petiolo crasso 1.5–3 cm. longo sparse pilosulo vel fere glabro; lamina obovato-oblonga 25–32 cm. longa 10–12 cm. lata, apice obtusissima vel rotundata et subito breviterque acuminata, basin acuminatam angustam versus sensim cuneato-angustata, supra sublucida glabra, costa nervisque perspicuis sed vix elevatis, subtus fere concolor minute puncticulata saltem ad costam venasque breviter fere minute pilosula tactu asperula, costa tenera elevata, nervis lateralibus utroque latere ca. 22 teneris prominulis arcuatis angulo lato interdum recto abeuntibus, nervo 1 secundario inter paria primariorum saepe obvio, venis fere obsoletis; inflorescentia terminalis amplissima sessilis basi triradiata cymoso-paniculata ca. 14 cm. longa et 22 cm. lata laxe multiflora, ramis late divergentibus omnibus basi bracteatis dense breviter pilosulis, bracteis anguste triangularibus patulis pilosulis, floribus pro parte sessilibus sed plerumque pedicellatis, pedicellis usque 7 mm. longis; hypanthium cum pedicello articulatum 2.5 mm. longum dense sordido-villosulum; sepala 5 fere libera viridia lanceolato-linearia 4–7 mm. longa sparse puberula ciliata; corolla caerulea ca. 13 mm. longa in alabastro obtusissima extus densissime adpresso-tomentosa, tubo crasso ca. 3 mm. lato basi dilatato, lobis obtusis 3 mm. longis; fructus immaturus 7–8 mm. longus obovoideus apice calyce persistente coronatus sparse villosulus vel sordido-puberulus, pyrenis acute costatis.—Ecuador: Prov. Esmeraldas, Parroquia de Concepción, Playa Rica, stream side in forest, alt. 105 meters, December 11, 1936, *Ynes Mexia* 8434 (type in Herb. Field Mus.).

"Flowers white within; corolla blue, pink-tipped exteriorly. Ornamental."

Palicourea rigida HBK. var. **stenophylla** Standl., var. nov. —Folia petiolata, lamina anguste oblongo-oblanceolata vel fere lineari-oblanceolata 12.5–26 cm. longa apicem versus 2.5–5.5 cm. lata, apice obtusa et apiculata, basin versus longe sensimque attenuata; caetera ut in forma typica speciei.—Brazil: Without locality, date, or name of collector, *F. C. Hoehne* 19763 (type in Herb. Field Mus.).

The plant, unfortunately without definite data, represents a form of this widespread species that is notable for its extremely narrow leaves. Otherwise it probably has no particular significance.

Palicourea Sodiroi Standl., sp. nov.—Subarborea, ramulis gracilibus in sicco fuscis subteretibus vel obtuse tetragonis glabris, internodiis elongatis ad 11 cm. longis; stipulae erectae persistentes ca. 7 mm. longae profunde bilobae, lobis approximatis ovatis acutis vaginae aequilongis vel longioribus; folia modica petiolata pergamentacea in sicco fusca, petiolo crassiusculo 1.5–3 cm. longo glabro; lamina elliptico-oblonga 10.5–18 cm. longa 4.5–8.5 cm. lata subito acuminata vel breviter acuminata, basi obtusa vel acuta, supra sublucida glabra, costa prominula, subtus concolor ad costam nervosque minute strigillosa vel fere omnino glabra, costa tenera prominente, nervis lateralibus utroque latere ca. 12 arcuatis prominulis teneris angulo lato interdum fere recto abeuntibus juxta marginem arcuato-junctis, venis vix elevatis laxe reticulatis, ubique subtus dense pallido-puncticulata; inflorescentia terminalis 6–8 cm. longe pedunculata elongato-thyrsiformis et fere spiciformis ca. 20 cm. longa et 3 cm. lata dense multiflora, rhachi crassa puberula, ramis omnibus abbreviatis et basi bracteatis, bracteis tenuibus ovatis acutis vix ultra 3 mm. longis persistentibus inconspicuis; hypanthium glabrum 1 mm. longum obovoideum, calyce late campanulato fere ad basin lobato, lobis late ovatis acutiusculis erectis; corolla fere 2 cm. longa extus glabra anguste tubulosa superne vix latior, tubo basi paullo dilatato medio fere 2 mm. lato, lobis suberectis late ovatis acutiusculis intus minute puberulis vix ultra 1.5 mm. longis.—Ecuador: Nanegal, August, 1874, *P. L. Sodiro* (type in herb. Budapest; photograph and fragment in Herb. Field Mus.).

Marked by the combination of greatly elongate and almost spike-like inflorescence and practically glabrous leaves. The inflorescence appears to have been erect in the living state.

Palicourea vacillans Standl., sp. nov.—Frutex 1.5 m. altus, ramis teretibus brunneis sparse puberulis, internodiis plerumque elongatis; vagina stipularis lata vix 2 mm. longa puberula, lobis remotis linearibus erectis usque 4 mm. longis viridibus; folia modica fere sessilia firme membranacea, petiolo vix ultra 2 mm. longo; lamina oblongo-lanceolata ad anguste oblonga vel ovato-oblonga

7-11 cm. longa 2-5 cm. lata anguste longiacuminata, basi anguste rotundata vel saepe emarginata vel breviter cordata, supra in sicco sublucida lutescens sparse minuteque puberula vel scaberula, costa nervisque prominulis, subtus paullo pallidior dense breviter velutino-pilosula, costa tenera prominente, nervis lateralibus utroque latere ca. 13 arcuatis teneris prominentibus angulo lato saepe fere recto abeuntibus in marginem desinentibus, venis paucis laxe reticulatis inconspicuis; inflorescentia terminalis sessilis et e basi triradiata vel longipedunculata et basi foliaceo-bracteata fastigiato-cymosa, 3.5-5 cm. longa et 4-7 cm. lata, ramis suberectis basi nudis sed supra basin interdum bracteatis ferrugineo-brunneis hirtellis, bracteis parvis subulatis, pedicellis crassis angulatis usque 7 mm. longis; fructus subglobosus vel didymo-globosus 5 mm. longus 5-6 mm. latus sparse puberulus, pyrenis dorso grosse obtuseque costatis.—Brazil: State of Minas Geraes, Diamantina, near km. 997.5 of railroad, in overgrown pasture, alt. 1,260 meters, common, fruit yellowish green, May 6, 1931, *Ynes Mexia* 5768 (type in Herb. Field Mus.).

The sessile leaves afford an easy means of recognizing this species.

Pentagonia brachyotis Standl. Journ. Wash. Acad. Sci. 17: 171. 1927. *Watsonamra brachyotis* Standl. Contr. U. S. Nat. Herb. 17: 443. 1914.—Known previously only from the type, collected near Marragantí, Panama. A recent collection is worthy of citation: Panama: Cana-Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 9, 1940, an herb or shrub 60-180 cm. high, the flowers crimson, *M. E. & R. A. Terry* 1426.

Psychotria amplifrons Standl., sp. nov.—Ramuli crassi obtuse tetragoni, novellis sordide puberulis vel villosulis; stipulae non visae, ut videtur caducae; folia inter maxima petiolata membranacea, petiolo 7-8 cm. longo villosulo vel glabrato; lamina elliptica, ut videtur usque 40 cm. longa (apice non viso), 17-20 cm. lata, prope basin subito contracta et longe angusteque cuneato-decurrens, supra in sicco fusca glabra, costa sulcata, nervis non elevatis, subtus brunnescens praesertim ad costam nervosque dense breviterque villosula, aliter sparse minute villosula vel glabrata, costa crassiuscula prominente, nervis lateralibus numerosis prominentibus angulo recto vel fere recto divergentibus fere rectis juxta marginem sursum curvatis et arcuato-conjunctis, venis paucis prominulis laxe reticulatis; inflorescentia terminalis ampla breviter pedunculata cymoso-paniculata dense multiflora ca. 8 cm. longa et duplo latior, ramis plerumque late divaricatis basi bracteatis sparse praesertim ad nodos villosulis vel fere glabris, bracteis patentibus ovato-oblongis acumi-

natis 3–4 mm. longis sparse villosulis, floribus dense aggregatis sessilibus vel breviter crasse pedicellatis; hypanthium breve columnare glabrum, calyce campanulato 2.5–3 mm. longo glabrato ad medium lobato, lobis ovali-ovatis obtusissimis erectis; corolla extus glabra vel glabrata in alabastro apice crasse obtuseque 5-verrucosa, tubo superne dilatato, lobis 5 patentibus triangulari-oblongis tubo aequilongis intus puberulis, fauce parce barbato; antherae oblongae subexsertae.—Ecuador: In silv. conv. Nanegal, August, 1874, *P. L. Sodiro* (type in herb. Budapest; photograph and fragment in Herb. Field Mus.).

The leaves are larger than those of any other Ecuadorean species, and are equaled in size by few if any species from other parts of tropical America.

Psychotria axillaris Willd. Sp. Pl. 1: 962. 1797. *Appunia parviflora* Lundell, Contr. Univ. Mich. Herb. 4: 28. 1940.—The type of *Appunia parviflora* is *Gentle* 2986 from Silk Grass Reserve, British Honduras. *Psychotria axillaris* is fairly common in some parts of South America and widely distributed, ranging from Colombia through the Guianas and southward far into Brazil and to the western slopes of Bolivia. In North America, rather strangely, it has been collected, so far as herbarium material indicates, only along the Atlantic coast of Guatemala and in British Honduras. Such a range is a quite natural one, but it is somewhat strange that the species has not been found anywhere between Colombia and Guatemala. Probably it will be discovered there when those intervening areas have been more thoroughly explored.

Psychotria boliviana Standl. Field Mus. Bot. 7: 302. 1931.—Of this species, endemic, so far as now known, in Bolivia, several collections have been made recently, all from the Department of La Paz: Prov. Larecaja, Tuiri, near Mapiri, left bank of Río Mapiri, alt. 490–750 meters, a shrub of 5 meters, September, 1939, *B. A. Krukoff* 10906; a shrub of 3.5 meters, *Krukoff* 10981. Prov. Larecaja, Copacabana, about 10 km. south of Mapiri, alt. 850–950 meters, a tree of 6 meters, *Krukoff* 11248; a shrub of 3 meters, *Krukoff* 11378. Prov. S. Yungas, basin of Río Bopi, San Bartolomé, near Calisaya, alt. 750–900 meters, July, 1939, a shrub of 4 meters, *Krukoff* 10362.

Psychotria Bradei Standl., sp. nov.—Frutex ut videtur densissime ramosus dense foliatus, ramis gracillimis subteretibus dense breviter hispidulis, pilis patulis vel adscendentibus, internodiis plerum-

que brevibus; stipulae persistentes in vaginam vix 1 mm. longam subtruncatam connatae, vagina utroque latere setis 2 erectis ca. 1 mm. longis vel interdum bene longioribus onusta; folia inter minima breviter petiolata rigide membranacea, petiolo gracili hispidulo vel puberulo usque 4 mm. longo; lamina elliptica ad lanceolato-elliptica 1.5–3 cm. longa 7–12 mm. lata acuta vel acuminata, acumine ipso anguste obtuso, basi cuneato-acuta, supra in sicco fusco-viridis glabra sublucida, costa tenerrima prominula, nervis obsoletis, subtus paullo pallidior ad costam teneram prominentem sparse puberula vel fere glabra, nervis lateralibus utroque latere ca. 9 obliquis prominulis arcuatis prope marginem conjunctis, venis paucis inconspicuis; inflorescentiae terminales 1–3-florae sessiles vel breviter pedunculatae, pedicellis puberulis usque 3 mm. longis rigidis, bracteis subulatis parvis; hypanthium puberulum obconicum ca. 1.2 mm. longum, calyce campanulato 4-dentato extus puberulo 0.8 mm. longo, dentibus triangularibus acutis; corolla ut dicitur alba, non visa; fructus caeruleus glaber subglobosus basi et apice rotundatus ca. 4 mm. longus et aequilatus.—Brazil: Estado do Rio de Janeiro, Sta. M. Magdalena, Alto da Republica, March 3, 1935, *Santos Lima & A. C. Brade* 14275 (herb. Jard. Bot. Rio 27681; type in Herb. Field Mus.). Sta. Magdalena, Alto do Desengano, alt. 2,000 meters, March 5, 1934, *Santos Lima & Brade* 13356 (herb. Jard. Bot. Rio 24609).

It is strange that so well marked a species occurring in Rio de Janeiro should not have been named long ago, but I have found no name that seemed applicable to this plant. Moreover, Mr. Brade's recent explorations in this state have discovered a number of other Rubiaceae that seemed to be new. *P. Bradei* is noteworthy for the greatly reduced leaves and inflorescences.

Psychotria chiococcoides Standl., sp. nov.—Subgenus *Mapouria*. Frutex glaber, ramis gracillimis teretibus fuscis sparse lenticellatis, internodiis plus minusve elongatis; stipulae caducae oblongolanceolatae 4 mm. longae ferrugineae acuminatae apicem versus interdum sparse pilosae; folia parva petiolata membranacea in sicco fusca, petiolo gracili 4–7 mm. longo; lamina oblongo-elliptica vel lanceolato-elliptica 4–6 cm. longa 1.5–2.5 cm. lata, acuta vel acuminata, basin versus sensim cuneato-angustata vel interdum subabrupte contracta et attenuato-decurrens, supra opaca, costa nervisque vix elevatis, subtus concolor, costa gracili prominente, nervis lateralibus utroque latere ca. 8 paullo irregularibus prominulis arcuatis laxe arcuato-conjunctis, venis obscuris; inflorescentia terminalis cymoso-paniculata parva laxissime pauciflora 2–3 cm. longa et aequilata vel latior, gracillime ca. 3 cm. longe pedunculata, floribus omnibus pedicellatis, pedicellis gracillimis usque 5 mm. longis, bracteis minutis; fructus globosus ca. 3 mm. diam. basi et apice rotundatus, pyrenis dorso obtuse costatis.—Brazil: Mogi-Guassu, São Paulo, July 18, 1902, *collector unknown* (*F. C. Hoehne* 11890; type in Herb. Field Mus.).

The plant is related to **Psychotria capillacea** (Muell. Arg.) Standl., comb. nov. (*Mapouria capillacea* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 405. 1881), whose leaves are rather long-acuminate at the apex and merely acute at the base. The inflorescences of the two species are much alike.

Psychotria foetidiflora Standl., sp. nov.—Frutex 2–4-metralis, ramis teretibus in sicco fuscis lenticellatis glabris, internodiis elongatis; stipulae coriaceae persistentes in vaginam latam 3 mm. longam truncatam glabram connatae, utroque latere lobis 2 subulatis 4–4.5 mm. longis rigidis erectis auctae; folia modica breviter petiolata papyracea, petiolo 6–8 mm. longo glabro crassiusculo; lamina lanceolato-oblonga 14–22 cm. longa 4.5–7.5 cm. lata longissime et subabrupte attenuato-acuminata, acumine saepe aliquanto falcato, basi acuta vel subcontracta et attenuato-decurrens, supra glabra, costa nervisque prominentibus, venulis vix prominulis reticulatis, subtus fere concolor, glabra vel glabrata, costa gracili elevata, nervis lateralibus utroque latere ca. 9 prominentibus pallidis angulo lato, saepe fere recto, adscendentibus arcuatis arcuatim prope marginem conjunctis, venis prominulis laxe reticulatis; inflorescentia terminalis sat dense multiflora cymoso-paniculata, paniculis 3–6.5 cm. longis 2.5–4 cm. latis, ramis sparse minuteque puberulis vel fere glabris crassiusculis, infimis patentibus vel adscendentibus, omnibus basi bracteatis, bracteis minutis saepe fere nullis, floribus plerumque sessilibus cymose aggregatis; hypanthium late columnare glabrum 1 mm. longum, calyce late campanulato 1 mm. longo truncato et remote minutissime denticulato glabro; flores foetidissimi albi, corolla extus glabra in alabastro apice obtusissima 4–5 mm. longa, in fauce dense pilis longis albis barbata, lobis patentibus vel recurvis lineari-oblongis obtusis tubo multo longioribus; antherae longiexsertae oblongae 1 mm. longae.—Brazil: Parintins, civ. Amazonas, silva non inundabili, December 12, 1935, *A. Ducke* 34998 (type in Herb. Field Mus.).

Psychotria Garciae Standl., sp. nov.—Subgenus *Mapouria.* Frutex metralis omnino glaber dense ramosus, ramis teretibus ferrugineis, novellis in sicco fuscis, internodiis foliis duplo brevioribus; stipulae caducae membranaceae ferrugineae ca. 4 mm. longae subtruncatae primo coalitae serius uno latere fissae, utroque latere apice appendice 3–5 mm. longo subulato auctae; folia inter minima breviter petiolata rigide membranacea, petiolo crassiusculo usque 5 mm. longo; lamina anguste oblongo-lanceolata usque lineari-lanceolata vel lineari-oblanceolata 2–4 cm. longa 5–10 mm. lata longe angusteque attenuata, apice ipso acutiusculo, basin versus longe angusteque attenuata, supra in sicco fusca opaca, nervis venisque occultis, subtus brunnescens, costa vix prominula, nervis lateralibus utroque latere ca. 6 obliquis irregularibus angulo ca semirecto adscendentibus inconspicuis, venis obsoletis; flores ut videtur terminales et subcapitato-aggregati (vel solitarii?) sessiles foliis occulti; calyx ad apicem fructus persistens campanulatus fere ad medium dentatus; fructus ovalis 6–7 mm. longus, pyrenis dorso obtuse grosse costatis.—Colombia: Dept. Nariño, east side of Gorgona Island, near sea level, in dense forest along stream, February 11, 1939, *E. P. Killip & Hernando García* 33152 (type in Herb. Field Mus.).

A species of distinctive appearance, because of the very dense foliage and small, narrow leaves, and also on account of the peculiar inflorescences, which, however, are not well represented upon the single specimen available for study. The relationship is probably with *P. chagrensis* Standl., of Panama, Costa Rica, and Nicaragua.

Psychotria luxurians Rusby, Mem. Torrey Club 6: 50. 1896.—The species was described from the eastern slopes of the Bolivian Andes, and ranges northward to Colombia. It has not been recorded from North America, but the following collections have appeared recently from Panama: Rain forest, Cana–Cuasi trail, Real District, Prov. Darién, alt. 1,650 meters, a shrub of 2.5–3.5 meters, March, 1940, *M. E. & R. A. Terry* 1573; same region, Camp 2, alt. 600 meters, March, 1940, a shrub of 2–2.5 meters, flowers white, No. 1524; same region, Camp 2, a tree of 4.5–9 meters, No. 1458.

Psychotria macrophylla R. & P. var. **angustissima** Standl., var. nov.—A forma typica speciei ut videtur differt tantum foliis insigniter angustis, lamina lineari-lanceolata vel angustissime lanceolata 20–25 cm. longa 2.5–4 cm. lata longissime angusteque attenuata.—Panama: Rain forest, north slope, Cana–Cuasi trail, Real District, Prov. Darién, alt. 1,650 meters, March 16, 1940, *M. E. & R. A. Terry* 1597 (type in Herb. Field Mus.). Cana–Cuasi trail, Camp 2, Chepigana District, alt. 1,200 meters, March 12, 1940, *M. E. & R. A. Terry* 1530.

Described as an herb 30–90 cm. high, with white flowers. *Psychotria macrophylla,* described originally from Peru, has a wide range, from Bolivia northward to southern Mexico. In this area it exhibits considerable variation, and it may well be that when the now abundant herbarium specimens are carefully studied, it will be found that more than one species is represented. The plant here described is notable for the extremely narrow leaves, the narrowest I have noted from any region, and very different from those of the common form. There are, however, intermediate specimens, and the inflorescence is similar to that of broad-leaved plants.

Psychotria mima Standl., sp. nov.—Arbuscula vel frutex ut videtur dense ramosus, ramis teretibus fuscis vel ferrugineis, novellis puberulis glabrescentibus, internodiis saepissime brevibus, vetustioribus magis elongatis; stipulae persistentes in vaginam puberulam vel pilosulam vix ultra 2 mm. longam connatae, vagina utroque latere in lobos 2 subulatos erectos fere aequilongos desinente; folia inter minora petiolata crasse membranacea vel fere subcoriacea, petiolo gracili vel crassiusculo vulgo 8–12 mm. longo breviter pilosulo; lamina lanceolato-oblonga vel anguste elliptico-oblonga, medio vel interdum supra medium latissima, acuminata vel longiacuminata, acumine anguste acuto, basi anguste cuneata vel basin versus longiattenuata, supra in sicco fusca glabra vix lucida, costa nervisque obscuris, subtus vix pallidior saepe brunnescens sat dense pilis brevibus subpatulis vel subadpressis pilosula tactu mollis, costa tenera prominente, nervis lateralibus utroque latere ca. 9 angulo lato adscendentibus arcuatis prominentibus, venis inconspicuis laxe reticulatis; flores ad apices ramorum pauci vel numerosi capitato-congesti sessiles, bracteis parvis vel minutis; hypanthium obconicum vix 1 mm. longum ut calyx dense puberulum, calyce late campanulato ca. 4.5 mm. longo fere ad medium vel multo brevius dentato, dentibus inaequalibus acutiusculis late triangularibus, calyce interdum subtruncato et remote dentato; corolla extus densissime basi tubi fere glabra tantum excepta pilis minutis subadpressis pallidis sericea, tubo 7–8 mm. longo fauce vix dilatato, intus in fauce barbata, lobis patentibus vel recurvis tubo paullo brevioribus lineari-oblongis obtusis; antherae lineari-oblongae semiexsertae; fructus globoso-ovalis ca. 7 mm. longus et fere aequilatus sparse hirtellus vel glabratus calyce paullo accrescente coronatus.—Brazil (State of São Paulo): Dense forest, Estação Biologica, Alto da Serra, alt. 800–900 meters, February 12, 1929, *L. B. Smith* 1878 (type in Herb. Field Mus.);

same locality, February 6, 1920, *A. Gehrt* 4500; March 4, 1918, *F. C. Hoehne* 1590; March 4, 1931, *Hoehne* 27225.

The several well preserved specimens are all alike and represent a distinct specific entity that is without an earlier name, so far as I have been able to discover. The collections, rather remarkably, have been referred at various times to the genera *Faramea*, *Alibertia*, and *Uragoga*, to the first two of which they certainly have little similarity.

Psychotria necopinata Standl. Field Mus. Bot. 11: 242. 1936.—The type is *Holt & Gehriger* 386 from the Rio Negro, Brazil, and one other specimen from the same region was cited with the original description. Two other collections typical of the species have come to hand more recently: Brazil: Rio Curicuriary affl. Rio Negro, silva ad ripas rupestres infra cataractas, frutex vel arbuscula usque 4 m. alta, flor. sordide aurantiacis, December, 1931, *A. Ducke* 24425.—French Guiana(?): Guyane, *Moricand* 205 (ex herb. Delessert). The species is one of a rather large number that might be placed about equally well in either *Psychotria* or *Cephaelis*.

Psychotria Pachecoana Standl. & Steyerm., sp. nov.—Frutex ramosus 2–2.5 m. altus, ramis gracilibus teretibus viridibus vel olivaceis dense pilis brevibus patulis lutescentibus pilosulis, internodiis plerumque brevibus; stipulae persistentes dense fulvo-pilosulae, vagina lata aliquanto incrassata ca. 4 mm. alta truncata, lobis remotis 3–4 mm. longis et ultra anguste triangulari-attenuatis erectis; folia breviter petiolata crasse membranacea, petiolo gracili 5–15 mm. longo dense breviterque piloso; lamina oblongo-oblanceolata vel anguste oblongo-lanceolata 7–15 cm. longa 2–4 cm. lata longe angusteque attenuata, basin angustam versus longe cuneato-angustata, supra viridis ubique sat dense pilis brevibus patulis vel subadpressis lutescentibus pilosa, costa nervisque obviis sed non elevatis, subtus pallidior et lutescens, dense velutino-pilosa, costa gracili elevata, nervis lateralibus utroque latere ca. 20 prominentibus leviter arcuatis angulo lato adscendentibus, venulis arcte reticulatis; inflorescentia terminalis 1.5–2 cm. longe pedunculata cymoso-paniculata multiramosa dense multiflora in statu fructifero 3.5–5 cm. longa et usque 7 cm. lata, ramis omnibus basi bracteatis fere rectangule patentibus dense hispidulo-pilosis, bracteis fere subulatis usque 4 mm. longis, floribus sessilibus dense aggregatis; fructus subglobosus 4 mm. longus basi et apice rotundatus sparse hirtellus, pyrenis dorso grosse obtuseque costatis.—Guatemala: Damp forest, mountain side north of the divide rising north of Santa Rosa, Dept.

Baja Verapaz, alt. about 1,650 meters, March 30, 1939, *Paul C. Standley* 69922 (type in Herb. Field Mus.). Near San José, southeast of Tactic, Dept. Alta Verapaz, alt. 1,500 meters, wet thicket, March 30, 1939, *Standley* 69627.

The species is a well marked one, not obviously related to any other of southern Mexico or northern Central America, and noteworthy especially for the very dense, close, yellowish pubescence. It is named for Don Mariano Pacheco Herrarte of the Dirección General de Agricultura of Guatemala, to whom we are indebted for innumerable courtesies and favors during the course of our work in Guatemala.

Psychotria Sodiroi Standl., sp. nov.—Arbuscula, ramulis gracilibus subteretibus olivaceo-ochraceis, novellis ut videtur in sicco viridibus dense et minutissime puberulis vel glabratis, internodiis brevibus; vagina stipularis lata 3 mm. longa dense adpresso-pilosa, lobis utroque latere 2 erectis viridibus 4–5 mm. longis lineari-attenuatis glabris; folia parva breviter petiolata membranacea, petiolo tenui 6–15 mm. longo minute puberulo; lamina anguste lanceolato-oblonga 7–12 cm. longa 2–3.5 cm. lata subabrupte angusteque longiacuminata, acumine fere caudiformi interdum subfalcato usque 2 cm. longo, basi acuta, supra viridis glabra, costa elevata, nervis non elevatis, subtus pallidior ad costam nervosque sparse vel dense pilosa, aliter glabra vel glabrata, costa tenerrima prominente, nervis lateralibus utroque latere ca. 14 arcuatis prominulis angulo lato divergentibus juxta marginem arcuato-conjunctis, venulis vix prominulis laxe reticulatis, nervo 1 secundario intra paria primariorum et cum eis parallelo addito; inflorescentia terminalis 2 cm. longe pedunculata laxe multiflora cymoso-paniculata ca. 4 cm. longa et 6 cm. lata e basi triradiata, ramis gracilibus patentibus basi bracteatis dense adpresso-pilosis, basalibus usque 1.8 cm. longis, bracteis basalibus linearibus et usque 17 mm. longis, ceteris oblongis ad ovatis viridibus et foliaceis obtusis ca. 4 mm. longis arcte imbricatis et flores involventibus, floribus sessilibus ad apices ramulorum dense aggregatis; hypanthium minute puberulum ovale vix 1 mm. longum, calyce campanulato viridescente minute puberulo profunde lobato, lobis late triangulari-ovatis acutiusculis erectis; corolla in alabastro 5 mm. longa apice obtusissima prope apicem minute hirtella, inferne glabra, tubo crasso superne vix dilatato, lobis tubo plus quam duplo brevioribus.—Ecuador: Nanegal, August, 1874, *P. L. Sodiro* (type in herb. Budapest; photograph and fragment in Herb. Field Mus.).

Psychotria solitudinum Standl., sp. nov.—Frutex 3-metralis, ramis gracillimis, vetustioribus ochraceis obtuse tetragonis, novellis viridibus glabris in sicco infra nodos paullo constrictis, internodiis superioribus 3–4.5 cm. longis; stipulae 4 mm. longae virides persistentes erectae bilobae, segmentis approximatis rigidis obtusis vel subacutis; folia modica petiolata papyracea, petiolo gracili 2–2.5 cm. longo glabro; lamina elliptico-oblonga 15–17.5 cm. longa 6–7 cm. lata abrupte breviter acuminata, acumine anguste triangulari acuminato, basi acuta, glabra, supra in sicco viridis, costa nervisque prominentibus, subtus multo pallidior, costa tenera elevata, nervis lateralibus utroque latere ca. 15 teneris prominentibus pallidis angulo lato abeuntibus leviter arcuatis prope marginem arcuato-conjunctis, venis fere obsoletis; inflorescentia terminalis ca. 7.5 cm. longe pedunculata cymoso-paniculata erecta(?) laxissima, pedunculo superne breviter hirtello, panicula ca. 11 cm. longa et aequilata vel latiore, ramis gracillimis omnibus basi bracteatis patentibus vel subreflexis hirtellis, bracteis plerumque ovatis et ca. 3 mm. longis, inferioribus paullo longioribus viridibus persistentibus hirtellis, floribus secus ramos sessilibus remotis; hypanthium puberulum latum ca. 0.8 mm. longum, calyce campanulato in sicco lutescente puberulo truncato ca. 1.2 mm. alto; corolla in alabastro apice breviter obtuse 5-tuberculata extus sat dense breviter pilosa, expansa 7–8 mm. longa lutea, tubo brevissimo glabrato subito in faucem 3–3.5 mm. latum dilatato, lobis ovato-oblongis obtusis fere 2 mm. longis.—Costa Rica: In forest, vicinity of El General, Prov. San José, alt. 700 meters, June, 1939, *Alexander F. Skutch* 4347 (type in Herb. Field Mus.).

In the key to the species of *Psychotria* in *Flora of Costa Rica* the plant would run directly to *P. cuspidata* Bredem., a species to which it is not closely related. It is more closely related to *P. Berteriana* DC. in which the calyx is dentate.

Psychotria vichadensis Standl., sp. nov.—Frutex nanus sat dense ramosus 40–50 cm. altus, ramis gracillimis subteretibus brunnescentibus vel viridibus dense minute puberulis, internodiis vulgo foliis duplo brevioribus; stipulae persistentes virides vix 1 mm. longae, inferne in vaginam truncatam coalitae, lobis utroque latere 2 brevibus remotis subulatis erectis; folia inter minima breviter petiolata firme membranacea, petiolo gracili e lamina non bene distincto usque 4 mm. longo; lamina lineari-lanceolata 2.5–3.5 cm. longa 4–6 mm. lata apicem angustum versus longe sensimque attenuata, basin versus longe anguste attenuata et fere ad basin petioli decurrens, supra lutescens lucida glabra, costa prominula, subtus paullo pallidior, sparse minutissime puberula vel fere glabra, costa tenui prominente, nervis lateralibus utroque latere ca. 7 tenerrimis irregularibus angulo semirecto vel paullo latiore adscendentibus; flores terminales capitato-aggregati, capitulis brevissime pedunculatis ca. 5-floris, floribus arcte sessilibus, bracteis exterioribus 1.5–2 mm. longis viridibus ovatis acuminatis; hypanthium subglobosum ca. 0.5 mm. longum puberulum, calyce cupuliformi paullo breviore minute inaequaliter dentato; corolla alba extus minute sparseque pilosula apice rotundata, 6 mm. longa, tubo sursum paullo dilatato, lobis oblongo-ovatis acutiusculis tubo ca. duplo brevioribus ut videtur patulis; antherae lineares exsertae 1 mm. longae.—Colombia: Comisaría El Vichada, abundant in sandy soil along Río Vichada, in forest, near San José de Ocune, alt. 100 meters, May 4, 1939, *Oscar Haught* 2807 (type in Herb. Field Mus.).

A well differentiated species, marked by its dwarf habit, almost minute flower heads, and especially by the exceedingly small and narrow leaves.

Rudgea cipoana Standl., sp. nov.—Frutex bimetralis, ramis crassiusculis teretibus in sicco brunnescentibus glabris, internodiis elongatis; stipulae ca. 1 cm. longae coriaceae persistentes basi incrassatae, ad medium vel profundius laciniato-lobatae, laciniis subulatis hispidulis; folia modica glabra breviter petiolata coriacea, petiolo crasso 5–8 mm. longo; lamina anguste lineari-lanceolata vel fere lineari-oblonga 8–13 cm. longa 1.3–2.5 cm. lata apicem acutum versus angustata, basin versus longe angusteque angustata, sublucida, supra in sicco olivacea, costa pallida vix elevata, nervis manifestis sed non elevatis, subtus multo pallidior, costa valde elevata, nervis lateralibus utroque latere ca. 13 teneris prominulis irregularibus angulo ca. semirecto adscendentibus prope marginem irregulariter conjunctis, venis prominulis laxe reticulatis, margine plus minusve revoluto; inflorescentiae parvae terminales capituliformes dense multiflorae obscure trilobae 1.5 cm. longe pedunculatae, in statu fructifero 1.5 cm. latae, floribus arcte sessilibus; calyx ad apicem fructus persistens, sepalis fere distinctis subulato-attenuatis ca. 2 mm. longis; fructus globosus 5–6 mm. longus glaber.—Brazil: Minas Geraes, capão, Serra do Cipó, km. 134, Municipio Santa Luzia, common, February 4, 1938, *H. Mello Barreto* 8892 (herb. Jard. Bot. Bello Horizonte 26197; type in Herb. Field Mus.).

Distinguishing characters of the species are the almost free, long and narrow calyx lobes, and the unusually narrow, leathery leaves, conspicuously paler on the under surface.

Rudgea hypomalaca Standl., sp. nov.—Frutex vel arbuscula, ramis crassis nodosis subteretibus ochraceis vel sordidis dense breviter hirtellis; stipulae persistentes et plus minusve induratae 5–8 mm. longae alte connatae extus dense hirtellae vel sordido-puberulae, lobis latis obtusis extus ad vel infra apicem setis paucis vel numerosis stramineis subulatis brevibus onustae, intus ad basin dense subulato-setosae; folia modica breviter petiolata coriacea vel subcoriacea, petiolo crasso 4–8 mm. longo dense hirtello; lamina oblonga, elliptico-oblonga vel lanceolato-oblonga, interdum supra medium paullo latior, acuta vel subacuminata, apice ipso vulgo obtuso, basi cuneato-angustata vel interdum subito contracta et acuta, supra in sicco fusca vel aliquanto flavescens glabra, costa saepe anguste impressa, nervis tenerrimis prominulis, sublucida, subtus pallidior ubique sat dense molliterque pilis patulis pilosa, costa elevata, nervis lateralibus utroque latere ca. 10 teneris prominentibus angulo lato adscendentibus subarcuatis, venulis prominulis laxe reticulatis, margine interdum revoluto; inflorescentiae terminales sessiles capitatae dense multiflorae 1.5–2 cm. diam., bracteis extimis stipulis conformibus, floribus arcte sessilibus; calyx extus dense fulvo-pilosus fere ad basin lobatus, lobis inaequalibus triangulari-oblongis obtusis vel acutiusculis usque 2 mm. longis; corolla alba extus dense villosulo-pilosa 12 mm. longa, tubo late obconico, lobis lanceolato-oblongis obtusis patentibus intus ad basin longivillosis; stamina breviter exserta, filamentis tubo corollae bene longioribus gracilibus, antheris anguste oblongis 2 mm. longis; discus glaber tumidus.—Brazil (State of Minas Geraes): Capoeira, Serra do Itacolomy, Municipio Ouro Preto, October, 1937, *J. Badini* 3161 (Jard. Bot. Bello Horizonte 22483; type in Herb. Field Mus.); same locality, campo, September 24, 1938, *Badini* 3208; matta, October 9, 1938, *Badini* 3251. Beira de corrego, Falcão (Ouro Preto), October 10, 1938, *Badini* 3241; October 23, 1938, *Badini* 3248.

The most obvious character of this Brazilian species is the abundant, soft, velvety pubescence of the lower leaf surface.

Rudgea mazanensis Standl., sp. nov.—Frutex 3-metralis glaber, ramis gracilibus sed rigidis subteretibus ochraceis, internodiis elongatis; stipulae persistentes coriaceae breviter bilobae intus ad basin dense setis incrassatis pallidis onustae 2–3 mm. longae, lobis latis obtusis vel rotundatis; folia modica fere sessilia firme papyracea, petiolo crassiusculo vix ultra 2 mm. longo; lamina variabilis ovata usque late ovata vel late elliptica 6.5–11 cm. longa 3.5–6.5 cm. lata subito sensimve longiacuminata, basi rotundata vel anguste rotundata, interdum paullo angustata, basi ipsa obtusa usque truncata, glabra, supra in sicco lutescenti-olivacea, costa nervisque prominentibus, subtus fere concolor, costa tenera prominente, nervis lateralibus utroque latere ca. 8 teneris prominentibus angulo lato interdum fere recto abeuntibus subarcuatis, venulis vix prominulis laxe reticulatis; inflorescentia parva terminalis sessilis vel subsessilis cymosa sat dense multiflora vix ad 2 cm. longa et aequilata, floribus plerumque in cymulas trifloras dispositis, flore terminali cymulae sessili, lateralibus sessilibus vel pedicellatis, pedicellis crassiusculis vix ultra 1 mm. longis, bracteis minutis late ovatis inconspicuis; hypanthium obovoideum ca. 1.2 mm. longum, calyce campanulari vix ultra 1 mm. longo truncato; corolla alba in alabastro apice obtusissima extus glabra, tubo ut videtur brevissimo; fructus 5 mm. longus in sicco obtuse quadrangularis.—Peru: Dept. Loreto, Gamitanacocha, Río Mazán, river bank, alt. 100–125 meters, March 5, 1935, *José M. Schunke* 351 (type in Herb. Field Mus.).

In general appearance as well as in details this is similar to the widespread *Rudgea cornifolia* (Humb. & Bonpl.) Standl., which might well be expected to occur in Peru, but in that species the inflorescence is always long-pedunculate.

Rudgea Mello-Barretoi Standl., sp. nov.—Frutex 1–3 metralis, ramis crassis valde nodosis subteretibus cinereis vel pallide ochraceis, internodiis abbreviatis, novellis dense hispidulis; stipulae ca. 5 mm. longae fere liberae triangulari-ovatae hispidulae subulato-mucronatae, basi et infra apicem setis paucis incrassatis pallidis auctae, longe persistentes et basi valde incrassatae; folia inter minora brevissime petiolata vel subsessilia crasse coriacea, petiolo crasso vix ultra 2 mm. longo hispidulo, saepius fere nullo; lamina oblonga vel oblongo-ovalis 3.5–5.5 cm. longa 1.5–3.5 cm. lata obtusa usque rotundata, basi obtusa usque breviter cordata, supra viridis lucida glabra, costa, nervis et venis prominulis, subtus paullo pallidior, saltem prope basin et ad costam breviter hirtella, serius fere glabra, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 7 prominentibus subarcuatis angulo latiusculo adscendentibus, prope marginem irregulariter conjunctis, venis prominentibus arcte reticulatis, margine interdum revoluto; inflorescentia terminalis densissime multiflora thyrsiformis vel fere capituliformis usque 3 cm. longa et 2.5 cm. lata sed interdum multo brevior breviter vel longiuscule pedunculata, ramis omnibus abbreviatis crassis puberulis, floribus sessilibus, bracteis parvis inconspicuis lanceolatis vel ovatis; hypanthium late obovoideum puberulum vel fere glabrum, sepalis fere distinctis 1 mm. longis viridibus oblongo-lanceolatis acutis fere glabris; corolla alba extus minute hirtella in alabastro obtusa, tubo crassiusculo sursum paullo dilatato 3.5–4 mm. longo, fauce albovilloso, lobis patentibus aequilongis lanceolato-oblongis obtusis; apices tantum antherarum exsertae, stylo exserto.—Brazil: State of Minas Geraes, na pedra, Bandeirinha, Municipio Diamantina, common, November 10, 1937, *H. Mello Barreto* 9710 (herb. Jard. Bot. Bello Horizonte 22234; type in Herb. Field Mus.). Same locality, November 4, 1937, *Mello Barreto* 9433 (herb. Jard. Bot. Bello Horizonte 22230).

Rudgea Pittieri Standl., sp. nov.—Frutex vel arbuscula glabra, ramulis crassis in sicco striatis subteretibus vel aliquanto complanatis, internodiis elongatis; stipulae magnae persistentes et incrassatae 7–8 mm. longae et 1 cm. latae vel ultra apice late rotundatae, dorso paullo infra apicem appendice 5 mm. longo vel ultra oblongo auctae, appendice apice setoso-laciniato, setis pallidis numerosis crassis, intus quoque setiferae; folia inter maxima petiolata subcoriacea, petiolo crasso 2–3 cm. longo superne marginato; lamina elliptico-oblonga vel lanceolato-oblonga, interdum supra medium paullo latior, 17–24 cm. longa et 5.5–10 cm. lata vel major, apice acuminata vel subito contracta et breviter acuminata, basin versus cuneato-angustata et ad petiolum decurrens, supra in sicco lucida fuscescens, costa nervisque prominulis, costa basin versus sulcata, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere ca. 12 tenerrimis prominentibus angulo latiusculo vel interdum semirecto adscendentibus rectis vel leviter arcuatis prope marginem irregulare arcuato-junctis, venis obsoletis; inflorescentia terminalis (in statu fructifero tantum visa) breviter pedunculata ut videtur capitata et dense multi- vel pauciflora foliaceo-bracteata, floribus ut videtur omnibus sessilibus; fructus ovalis 1.5 cm. longus et 1 cm. vel ultra latus.—Panama: Loma de la Gloria, near Fató (Nombre de Dios), Prov. Colón, alt. 10–100 meters, July–August, 1911, *H. Pittier* 3855 (type in Herb. Field Mus.).

The two sheets of material at hand are in poor condition for study, and it is probably on this account that they have remained so long without a name. Floral details can not be determined. Only a few species of *Rudgea* are known from Central America, and this plant is different from all of them, especially in its very large leaves.

Rudgea pleurocalyx Standl., sp. nov.—Arbor parva omnino glabra, ramis teretibus ochraceis rigidis, novellis ut videtur viridibus; stipulae induratae et persistentes fere annuliformes vix ultra 2 mm.

longae, apice setulis numerosis approximatis et confertis brevibus incrassatis onustae; folia modica petiolata subcoriacea, petiolo 6–12 mm. longo; lamina elliptica vel oblongo-elliptica 8.5–14 cm. longa 4.5–7 cm. lata acuta vel subacuminata, basi obtusa vel subacuta, supra viridis lucida, costa nervisque prominentibus, subtus paullo pallidior lucida aliquanto flavescens, costa tenera prominente pallida, nervis lateralibus utroque latere ca. 9 teneris prominulis subarcuatis angulo latiusculo abeuntibus prope marginem arcuato-conjunctis, venulis prominulis arcte reticulatis; inflorescentia terminalis cymoso-corymbosa ca. 3.5 cm. longa et 3–5 cm. lata dense multiflora 1.5–2.5 cm. longe pedunculata, ramis basalibus vulgo 5 crassis suberectis, floribus sessilibus, bracteis late ovatis parvis; hypanthium crassum 1.5 mm. longum, calyce late campanulato 2.5–3 mm. longo costato-striato brevissime dentato, dentibus latissimis approximatis; corolla alba in alabastro apice obtusa, tubo crasso 9 mm. longo 3 mm. lato, lobis patentibus oblongis obtusis 5 mm. longis; antherae lineares subexsertae; stylus longiexsertus.—Brazil: Parintins, civ. Amazonas, Lago Uaicurapá, "igapó" secus rivulum juxta campinam, September 5, 1932, *A. Ducke* 24416 (type in Herb. Field Mus.).

Rustia Isernii Standl., sp. nov.—Frutex vel arbor ut videtur omnino glabra, ramulis crassiusculis ochraceis longitrorsum rugosis, internodiis superioribus abbreviatis; stipulae caducae, non visae; folia magna petiolata crasse papyracea, petiolo gracili 3–4 cm. longo; lamina obovata usque cuneato-oblanceolata 16–22 cm. longa 6.5–10 cm. lata, apice obtusa vel subrotundata atque breviter acutata, apice ipso obtuso, ad basin longe sensim cuneato-angustata, basi ipsa anguste acuta, supra in sicco sublucida fuscescens, costa nervisque prominentibus, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere ca. 10 teneris prominentibus subarcuatis angulo latiusculo adscendentibus prope marginem laxe arcuato-conjunctis, venulis inconspicuis plerumque transversis et subparallelis arcuatis, laxe hinc inde reticulatis; inflorescentia terminalis breviter racemosa vel subcymosa condensata pauciflora sessilis, rhachi racemi ca. 7 mm. longa crassa, pedicellis crassiusculis plerumque 1–1.5 cm. longis; hypanthium brevissimum, calyce fere rotato 3 mm. lato obsolete lateque lobulato, disco supra calycem valde protruso; corolla ca. 2.8 cm. longa, tubo crasso sursum paullo dilatato fauce 4 mm. lato, lobis 5 anguste lanceolato-oblongis apicem versus angustatis acutis tubo fere aequilongis.—Peru: Chanchamayo, October 14, 1863, *Juan Isern* 2121 (type in Herb. Field Mus.); October 19, 1863, *Isern* 2126.

This is the first representative of the genus *Rustia* to be recorded for Peru.

SICKINGIA

Several years ago the writer reduced to synonymy under *Sickingia* (Field Mus. Bot. 12: 390. 1936) the genus *Calderonia*, originally described from Salvador, whose single species is now known to have a wide distribution in Yucatan and northern Central America. Further study shows that the genus *Exandra*, published at the same time as *Calderonia*, must likewise fall into the synonymy of *Sickingia*. Since a new species of the genus is to be described below, it is worth while to give a key to the species now known from Mexico and northern Central America.

Leaf blades oblong-obovate, mostly 4.5–8 cm. wide, the basal lateral nerves not emitting conspicuous secondary nerves on the outer side.......................................*S. salvadorensis.*

Leaf blades suborbicular to rounded-ovate or rounded-obovate or broadly elliptic, mostly 10–20 cm. wide or larger, the lowest lateral nerves emitting numerous conspicuous secondary nerves on the outer side.

  Branches of the inflorescence very densely pilose-tomentose; leaves densely and softly villous beneath; capsule 5 cm. long. *S. mexicana.*

  Branches of the inflorescence glabrate or merely sparsely puberulent; leaves merely puberulent beneath or sparsely pilose, barbate in the nerve axils.

    Leaf blades densely and minutely puberulent beneath, rather deeply cordate at the base; capsule 4 cm. long. *S. Calderoniana.*

    Leaf blades almost glabrous beneath but barbate in the nerve axils, conspicuously narrowed to the narrowly rounded or shallowly cordate base; capsules unknown. .*S. rhodoclada.*

Sickingia salvadorensis Standl. Field Mus. Bot. 12: 390. 1936. *Calderonia salvadorensis* Standl. Journ. Wash. Acad. Sci 13: 290. 1923.—The type was collected from a cultivated tree in the city of San Salvador, Salvador, *Calderón* 761. In the original description specimens were reported also from Tonacatepeque, Nahulingo, and Sonsonate, Salvador, and from Patalul, Dept. Sololá, Guatemala. The following additional material may be reported from the Herbarium of Field Museum: Yucatan: Without special locality, *Dr. Román S. Flores* in 1935.—Guatemala: Hiltún, Petén, *Lundell* 1933.

Uaxactún, Petén, bark white, red after exposure to the air, *H. H. Bartlett* 12428.—British Honduras: River bank, Río Grande, occasional, a tree of 18 meters, the trunk 60 cm. in diameter, flowers cream, *Schipp* 1198. Boom, lower Belize River, *Duncan Stevenson* 18. Punta Gorda region, *Schipp* 1214. Valentin, El Cayo District, a tree of 26 meters, the trunk 30 cm. in diameter, *Lundell* 6367. San Antonio, Toledo District, in 1929, *J. E. Thompson.* Stann Creek District, *F. G. Burne* (Yale School For. 9705).

The very narrow leaves of this species are distinctive, and all the material cited is reasonably uniform. Vernacular names reported are campeche, brasil, palo colorado, drago, sangre de chucho (Salvador); John Crow redwood, chactemuch, chuc-chenuch (British Honduras; the last two Maya).

Sickingia mexicana Bullock in Hook. Icon. ser. IV. 4: *pl. 3321.* 1936.—The species was based upon five collections from the states of Mexico and Guerrero, all made by Mr. George B. Hinton. The vernacular name is reported as Cucharillo. The shrub or tree is said to be 2–6 meters high, and to bear pink flowers. The species is a very distinct one, especially because of the dense pubescence covering almost all parts. One additional collection may be reported for it: Placeres, Distrito de Mina, Guerrero, Mexico, a tree of 4 meters, the anthers yellow, alt. 350 meters, September, 1937, *Hinton* 10391. In describing this species, its author remarks that one species of *Sickingia* "has been found in Honduras." I have seen no material from that country. Possibly British Honduras was intended, but that is a quite different country from Honduras.

Sickingia Calderoniana Standl., sp. nov.—Arbor, ramis crassis ochraceis vel subferrugineis subteretibus pallide elevato-lenticellatis primo ut videtur dense minuteque puberulis; stipulae anguste triangulares ca. 3.5 cm. longae longiattenuatae extus dense minutissime puberulae; folia magna petiolata herbacea, petiolo crasso 2.5–4.5 cm. longo dense puberulo; lamina late ovato-ovalis usque suborbicularis 16–26 cm. longa et 12–23 cm. lata vel major, apice breviter acutata vel acutiuscula, basi lata et vix angustata sat profunde (usque 3 cm.) cordata, sinu angusto, lobis posticis late rotundatis, supra sublucida, primo ut videtur densiuscule puberula, cito glabrata, costa nervisque non prominentibus, subtus pallidior, ubique dense minuteque sordido-puberula, in axillis nervorum et venarum hirsuto-barbata, costa gracili elevata, nervis lateralibus utroque latere ca. 13 angulo semirecto vel latiore adscendentibus fere rectis versus marginem nervos secundarios 2–3 dichotomos emittentibus, nervis 2 infimis latere exteriore nervos secondarios plures prominentes et conspicuos emittentibus, venis prominentibus arcte reticulatis; capsula globosa 3–4 cm. longa apice plana, basi rotundata, dense pallido-lenticellata; semina, ala inclusa, ca. 2.5 cm. longa et fere 1 cm. lata, ala tenui diaphana.—Salvador: Jayaque, finca del Dr. Zárate, January 9, 1939, *Dr. Mario Levy Van Severén* 66 (type in Herb. Field Mus.; received from Dr. Salvador Calderón). Finca del Dr. Augusto Gómez Zárate, Tepecoyo, February 28, 1939, *Salvador Calderón* 66.

Local name, Brasil. Here may belong also a sterile specimen, *Calderón* 2189 from the Department of Santa Ana, collected in 1924. However, in both pubescence and outline the leaves vary substantially from the two collections of *S. Calderoniana,* and it may be that another species is represented. This sterile collection was once determined by the writer as *Exandra rhodoclada,* discussed below, but it is improbable that it, or two other Salvadorean ones in sterile condition reported in the original description of *Exandra rhodoclada,* really represent that species.

Sickingia Calderoniana is somewhat similar to *S. mexicana,* but in that the capsules are smaller, and in dehiscence their valves are somewhat upturned; those of *S. Calderoniana* remain plane. The dense, long pubescence of *S. mexicana* is a more conspicuous distinguishing character. There is some question as to whether *S. Calderoniana* is distinct from *S. rhodoclada,* whose capsules are unknown. The quantity and distribution of the leaf pubescence, and especially its character, are so different in the two series of specimens that it seems probable that two amply distinct trees are represented.

Sickingia rhodoclada (Standl.) Standl., comb. nov. *Exandra rhodoclada* Standl. Journ. Wash. Acad. Sci. 13: 292. 1923.—It is now obvious that *Exandra* must become a synonym of *Sickingia,* but its single species is a valid member of the latter genus. The type of *Exandra rhodoclada* is *E. W. Nelson* 2796, collected between La Venta and Niltepec, Oaxaca, Mexico. Two recent collections, both unfortunately sterile, appear to be conspecific: Fortuño, Coatzacoalcos River, Oaxaca, alt. 30–50 meters, March, 1937, *Llewelyn Williams* 8407. Uvero, Oaxaca, alt. 30–90 meters June, 1937, *Williams* 9439.

Mr. Williams reports the vernacular name as Nazareno and supplies the following notes: A tree 12–24 meters tall, with spreading crown; trunk moderately straight, round, 20–40 cm. or more in diameter, free of branches for as much as 9 meters, slightly fluted;

branches few, stout, upright or almost vertically disposed; bark medium brown, fairly smooth; inner bark white when cut but turning bright pink on exposure; buttresses 4, about 60 cm. high; sapwood cream-colored to deep brown; heartwood rich vermillion or dark brown to almost black, distinctly defined. A deep pinkish red resin exudes when the bark is cut. Wood not difficult to cut, splits easily, valued for railroad ties, ax handles, bridge construction, and other uses requiring strength and durability. Fairly common at Fortuño, uncommon about Uvero. Growing in upland forest.

Steyermarkia Standl., gen. nov.—Herbae perennes suffruticosae fere acaules, caule brevissimo nodoso suffruticoso, longihirsutae; folia opposita ad apicem caulis dense conferta magna membranacea breviter petiolata acuta vel acuminata, basin versus longe angustata; stipulae lineari-lanceolatae subfoliaceae et virides persistentes; flores tetrameri magni rosei cymosi, cymis dense multifloris capituliforme condensatis vel subracemosis, inflorescentia longipedunculata axillari, bracteis magnis linearibus foliaceis; hypanthium semiglobosum vel campanulatum pilis longissimis glanduliferis obtectum; calycis lobi 4 fere liberi lineares erecti elongati et subfoliacei persistentes; corolla hypocraterimorpha extus dense longipilosa, tubo elongato gracili fauce vix dilatato, in fauce non barbato, limbo tubo duplo breviore 4-lobo, lobis magnis subaequalibus late ovalibus apice rotundatis intus basin versus pilis sparsis papilliformibus 2–3-locularibus conspersis, late patentibus, in alabastro contortis; stamina 4 in fauce tubi inserta inclusa, filamentis brevibus, antheris dorsifixis linearibus obtusis; discus annularis; ovarium 2-loculare, stylo filiformi, ramis 2 brevibus oblongo-linearibus subrecurvis inclusis; ovula in loculis numerosis placentis septo affixis inserta, anatropa; capsula subglobosa majuscula coriacea 2-locularis loculicide ut videtur bivalvis polysperma; semina minuta globosa exangulata, testa leviter reticulata vix foveolata.

Type species, *Steyermarkia guatemalensis* Standl.

Steyermarkia guatemalensis Standl., sp. nov.—Suffruticosa, caule usque 8 mm. crasso vix ad 8 cm. longo, nodis brevissimis, prope apicem densissime foliato; stipulae lineari-lanceolatae usque 2 cm. longae longissime attenuatae, extus dense albido-hirsutae intus glabrae; folia magna tenuiter herbacea, petiolo usque 4 cm. longo sed vulgo multo breviore longihirsuto; lamina oblanceolato-oblonga vulgo 16–28 cm. longa et 5–10 cm. lata acuta vel acuminata, basin versus longe sensimque arcuato-angustata, basi ipsa acuta, supra viridis dense longihirsuta, pilis patentibus albidis usque 6 mm. longis vel ultra, subtus pallida densius longihirsuta, costa tenera prominente, nervis lateralibus utroque latere ca. 16 teneris prominentibus angulo semirecto vel latiore adscendentibus, venis inconspicuis laxe reticulatis; pedunculi axillares 9–12.5 cm. longi nudi longihirsuti, inflorescentia dense congesta et capituliformi, corollis exclusis ca. 5 cm. lata, vel e cymis 3 composita, cymis infimis breviter pedunculatis a terminali 3.5 cm. distantibus, bracteis infimis viridibus usque 2 cm. longis anguste lanceolatis longiattenuatis, interioribus paullo angustioribus sed fere aequilongis dense hirsutis, floribus sessilibus vel breviter pedicellatis; hypanthium breve dense pilis longis glanduliferis indutum, sepalis anguste linearibus erectis hirsutis 10–14 mm. longis; corolla extus dense pilis longis patentibus albidis hirsuta, tubo gracili 3.5–4 cm. longo 2 mm. lato, in fauce breviter angusteque dilatato, limbo patente profunde lobato, lobis ca. 18 mm. longis et 1 cm. latis, tubo intus glabro; stamina ca. 1.5 cm. infra orem tubi inserta, antheris 5–6 mm. longis 1.2 mm. latis, filamentis 2 mm. longis glabris; stigmata papillosa; capsula 7–8 mm. longa dense longihirsuta in sicco straminea basi rotundata; semina sublucida 0.4 mm. diam. fusco-brunnea.—Guatemala: Dept. Izabal, Río Dulce, 2–4 miles west of Livingston, on south side (left-hand side going up the river), at sea level, April 16, 1940, *Julian A. Steyermark* 39520 (type in Herb. Field Mus.).

"Suffruticose. On shaded, moist, limestone bluffs, near their base. Leaves membranaceous, dull grass-green above, the midrib prominent beneath, greenish white. Calyx lobes pale green. Corolla white in the center, with regular, equal, orchid-pink lobes. The lobes in dried specimens have shrunk one-third; in life the corolla limb measures 4.5–5 cm. in width."

This new genus is named for its collector, Dr. Julian A. Steyermark, Assistant Curator of the Herbarium of Field Museum, as a well deserved tribute to his enthusiastic and intensive investigation of the Guatemalan flora, during the Stanley Field Expedition of 1939–40. The plant described is so showy and conspicuous that one wonders that it has escaped other rather numerous botanical collectors who have visited the Río Dulce. Perhaps it is rare and very local in occurrence.

In habit this rubiaceous herb much suggests some of the Acanthaceae, being almost acaulescent, with a large number of long, thin leaves disposed so densely as to appear rosulate. Well above the leaf cluster rise the long, stiff, naked peduncles, bearing dense clusters of showy, bright pink, long-tubular flowers. To one familiar with the Rubiaceae it is clear that the plants, in spite of the unusual size of their leaves and flowers, bear much resemblance to the genus *Sipanea,* to which structural details indicate their close relationship. The genus *Sipanea,* of the tribe Rondeletieae, has a number of species in tropical South America, and one ranges northward to the westernmost Antilles, but no species have been recorded for continental North America. In *Sipanea* the plants are low herbs with elongate, leafy stems, along which are scattered the small leaves. The flowers are 5-parted, the corolla usually yellow-barbate in the throat, and the seeds angulate and conspicuously reticulate. The habit of the Guatemalan plant, combined with 4-parted flowers, naked corolla throat, and globose, not angulate seeds, are sufficient characters for its recognition as a distinct genus.

The corolla limb in *Steyermarkia* is rather shallowly lobed, that is, not nearly to its base. The pubescence of the young hypanthium and probably also of other parts consists of very long and slender hairs that at first are gland-tipped. The glands disappear at an early stage, perhaps breaking from the hair tips or possibly being absorbed in some manner.

STUDIES OF
CENTRAL AMERICAN PLANTS—I

BY

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STUDIES OF CENTRAL AMERICAN PLANTS—I

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During 1938–40 Field Museum sent to Guatemala two expeditions under leadership of the writers. The first, from November, 1938, to May, 1939, was the Sewell L. Avery Botanical Expedition to Guatemala, undertaken by the senior author; the second, from September, 1939, to May, 1940, the Field Museum Expedition to Guatemala, was directed by the junior author.

The immediate purpose of these expeditions was the assembling of herbarium collections to serve as the basis of a *Flora of Guatemala* now in preparation. They resulted in the collection of more than 27,000 numbers, with many duplicates, of phanerogamic and cryptogamic plants. Both expeditions were highly successful in fulfilling the purposes for which they were planned. Material was obtained of several thousand species of plants, some common and already known from Guatemala, others representing species described from Guatemala but known previously only from the type material, and also many Central American and Mexican species unknown previously from Guatemala. In addition there was obtained a satisfactory and even surprising number of apparently new species.

The following pages are devoted principally to descriptions of new species of Guatemalan plants, or to notes regarding species new to the country, or of rare occurrence inside Guatemala or in other parts of their range. The data here presented represent only a small part of those worthy of report, and additional matter will be published later. Of the collection made by the expedition of 1939–40 only a minor portion has been studied. While most of that obtained in 1938–39 has been determined, there are mentioned here only a few of the more interesting species, many others of equal interest remaining for further attention and report.

The writers made extensive or limited collections in all the 22 departments of Guatemala except Petén, that being the only one—and a very large portion of the country, it must be admitted—not easily reached by convenient means of transportation. Guatemala is almost unique among Latin American countries in its very elaborate—considering its size—road system, enabling one to reach almost all inhabited regions by automobile. This naturally facilitates greatly botanical collecting, for with one's collecting outfit in a passenger car or truck, it is possible to arrive at a great number of central points from which there can be made short excursions covering almost the whole of Guatemala except Petén.

The senior author during 1938–39 collected in all the 22 departments except two, Jalapa and Petén. More time was spent with headquarters at Antigua than elsewhere. That happens to be a center from which radiate numerous roads, leading in all directions. Extensive collections were made in the highlands and numerous excursions to the Pacific lowlands, the slopes of the volcanoes of Agua and Acatenango, a visit of two days to the Oriente, a long tour through the departments of Sololá and Quiché, to Huehuetenango, returning by way of Quezaltenango, Totonicapán, and the Lake of Atitlán.

Later, with headquarters at Quezaltenango, several weeks were devoted to exploration of the exceedingly rich Occidente, with long trips to Huehuetenango, the Sierra de los Cuchumatanes, various localities in the white-sand region of San Marcos, to Malacatán and Ayutla, and along the vast barranco of the Río Samalá to Mazatenango, Retalhuleu, and Champerico. One trip was made by way of Palojunoj to the summit of the Volcano of Santa María.

Almost a month, but only a very brief space of time considering the size and richness of the area involved, was spent at Cobán in Alta Verapaz, long celebrated for its orchids and its great variety of vegetation typical of upland and lowland rain forest. It is said of Cobán that rain falls there 13 months of the year, and such humidity results in a vivid greenness that is most welcome to the eye after the somewhat barren conditions prevailing in many other portions of Guatemala during the so-called dry season, the winter months of the North.

Before leaving the country, Mr. Standley spent a few days in the departments of Zacapa and Chiquimula, and three weeks in the banana country of the north coast, with headquarters at Puerto Barrios. He had collected here 17 years previously, but at this time found many plants not observed upon the earlier visit.

The junior author during the corresponding months of 1939–40 explored rather intensively several large areas not visited at all, or investigated only casually by Mr. Standley. Arriving in Guatemala before the end of the rainy season, he worked first in the Oriente, the eastern portion of the country near the borders of Honduras and Salvador. Here much of the vegetation dries quickly after the end of the rains, hence it is only while there still is moisture that it can be collected to advantage. From Zacapa trips were made to the Sierra de las Minas, whose flora is related with that of Alta Verapaz, and to other local areas of botanical promise. Later, from headquarters at Chiquimula, Camotán, and Quezaltepeque, visits were made to several of the isolated volcanoes and peaks, such as Volcán de Quezaltepeque, Volcán de Ipala, Cerro Tixixí, Cerro Nonojá, Montaña El Barriol, Montaña Castilla, Cerro Brujo, Socorro Mountain, and many others that rise above the eastern plains. Then from Asunción Mita in the Department of Jutiapa trips were made to Volcán de Suchitán, which is isolated for miles from any other peak, saline flats and marshes around Trapiche Vargas, and the lakes Güija and Atescatempa, which were remarkable for their aquatic species. The last part of the Oriente to be visited was the Department of Jalapa, poorly represented previously in botanical collections. Here, with headquarters at Jalapa, Miramundo, and Minas de Croma, trips were made to Volcán de Jumay, Montaña Miramundo, Potrero Carrillo, Montaña Durazno, and Lago Retana.

More than a month was passed with headquarters at Finca Pireneos, in the valley of the Río Samalá, Department of Quezaltenango, where facilities for collecting were very courteously provided by Professor Ulises Rojas, Director of the Botanical Garden of Guatemala. From this locality there were explored the little known volcanoes of Santa María and Zunil, the summits of both being reached, and the somewhat meager alpine flora of the former collected.

A rather thorough exploration was made of certain areas of the Department of San Marcos, which lies along the Mexican border. Most attention was given to the volcanoes of Tajumulco and Tacaná, the former the highest peak of Central America. Collections made on these two mountains prove to be probably the richest in new and rare species of all those made during present Guatemalan explorations.

So vast is the area of Volcán Tajumulco that it was worked from various altitudes and localities, on the rear plateau side from San Sebastián, on its northwestern slopes from the village of Tajumulco, and on its Pacific slopes from Finca El Porvenir. A good cross-section of this mighty volcano was thereby studied. The tree ferns, of which large and extensive collections were made, are more abundant and conspicuous here and on the volcanoes of Santa María and Zunil than anywhere else in Central America. In order to work the Guatemalan portion of Volcán de Tacaná, a long mule trip was made from San Sebastián to Sibinal, where headquarters were established for five days' collecting.

From the Occidente work was transferred to an altogether unlike region, the lowlands of the north coast. With headquarters first at Bananera and later at Puerto Barrios, in both cases furnished through the courtesy of the United Fruit Company, a large and rich collection was made, especially in the Sierra del Mico and along the Río Dulce and Lake Izabal. These collections also have proved to be surprisingly rich in new species and in species new for Guatemala.

On the following pages there are described no less than four new genera, two based upon species already described under other generic names, and two that are new as to both genus and species. Special attention is drawn to the plant of the Compositae here named *Rojasianthe superba*. It is one of the most elegant and exquisitely beautiful plants that we have ever seen in Central America, or elsewhere. Suggesting in appearance a tree *Dahlia*, with a multitude of large heads, having long, paper-white rays and black centers, and visible at a great distance wherever it grows, it is hard to understand how it has escaped the several botanical collectors, dating back to the time of Hartweg, who have visited the Occidente. Its range, so far as now known, is rather limited, and probably it has merely happened that none of those earlier visitors reached the secluded ravines where the plant grows. It is to be hoped that it may be introduced into cultivation, but probably it is rather particular as to environment. It is believed that it might flourish about San Francisco, California, or perhaps in southern England. A large plant would well justify, when in flower, the space it would occupy in a sufficiently spacious greenhouse.

GRAMINEAE

Luziola Spruceana Benth. ex Doell. in Mart. Fl. Bras. 2, pt. 2: 18. 1871.—In continental North America this strange grass has been found heretofore, so far as we know, only in Lake Yojoa, Honduras (see Standley, Field Mus. Bot. 11: 146. 1936). Recently it has been collected in Guatemala: Dept. Jutiapa, Lago de Atescatempa, south of Asunción Mita, alt. 500–800 meters, November, 1939, *Steyermark* 31879. Plants monoecious, growing in water, the staminate inflorescence yellow, the pistillate white.

Zeugites latifolia (Fourn.) Hemsl. Biol. Centr. Amer. Bot. 3: 577. 1885. *Krombholzia latifolia* Fourn. Bull. Soc. Bot. Belg. 15: 463. 1876.—This handsome grass was described from Mexico, and until recently was supposed to be confined to that country. However, two recent Central American collections of it are at hand: Guatemala: Dept. Suchitepéquez, Finca Moca, alt. 930 meters, *Skutch* 2059; growing in clumps, to 3 meters in height. Dept. Quezaltenango, Finca Pireneos, lower slopes of Volcán de Santa María, alt. 1,300–1,500 meters, *Steyermark* 33266; plants 3 meters tall, on open slopes in thickets.

JUNCACEAE

Luzula racemosa Desv. Journ. de Bot. 1: 162. *pl 6, f. 3*. 1808. —The genus *Luzula* is poorly represented in Central America, where it is confined to the higher mountains. *Luzula gigantea* Desv. is the only common and widely dispersed species, and the only one known previously from the region, so far as available records indicate. The collections cited below are referable to *L. racemosa* as that species is treated in the notoriously unsatisfactory treatment of the family by Buchenau in the *Pflanzenreich*. Guatemala: Dept. San Marcos, Volcán de Tajumulco, common on rocky summit from the base of the dome to its top, alt. 4,400–4,600 meters, *Steyermark* 35536. Dept. Quezaltenango, exposed summit of Volcán de Santa María, alt. 4,200 meters, *Steyermark* 34200.

JUGLANDACEAE

Engelhardtia guatemalensis Standl. Bot. Ser. Field Mus. 22: 12. 1940.—When this species was published, there was overlooked one collection that indicates a rather wide range for the species: Guatemala: Dept. Quezaltenango, Finca Pireneos, below Santa María de Jesús, alt. 1,350–1,380 meters, damp, dense forest, a large tree, *Standley* 68332. The specimen is sterile, but the foliage agrees with that of the material from the distant department of Alta Verapaz. The local name was given at Finca Pireneos as Palo colorado. There may be reported also another Guatemalan collection: Dept. San Marcos, above Finca El Porvenir, up Loma Bandera Shac, lower south-facing slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, *Steyermark* 37347; a tree of 9 meters, on middle and upper slopes; leaves chartaceous, dark green above, paler, dull green beneath.

MORACEAE

Coussapoa Purpusii Standl. Field Mus. Bot. 8: 6. 1930.—The species was based on material collected in Veracruz, Mexico. Additional collections show that its range extends far beyond that state: Mexico: Zacuapam, Veracruz, on rocks in barrancas, half epiphytic, May, 1933, *Purpus* 11162. Jalisco, Las Mesitas, northwest of San Sebastián, Sierra Madre, alt. 1,700 meters, stream side, *Mexia* 1872 (distributed as *Oreopanax capitatum*); trunk embraced by a wild fig, but sending out branches 6–8 meters long; staminate inflorescence red. Santa Rita, Mapastepec, Chiapas, *Matuda* 2020.—Guatemala: Dept. San Marcos, Finca El Porvenir, on Potrero Matasán along Río Cabús, Volcán de Tajumulco, alt. 1,000–1,300 meters, *Steyermark* 37602; local name Matapalo; epiphytic shrub, the leaves coriaceous, rich, dark green above with greenish white nerves, silvery beneath; fruit dull orange spotted with deeper orange, globose. Dept. Quezaltenango, Colomba, in coffee plantation, alt. 900 meters, *Skutch* 2023; a tree of 18 meters, epiphytic on an *Inga* tree, to whose trunk it is attached by clasping roots; flowers dull red. The plant of Chiapas and Guatemala has somewhat wider leaves and may prove, when more ample material is available, to represent a distinct species.

Ficus cabusana Standl. & Steyerm., sp. nov.—Arbor 30-metralis fere glabra, ramulis crassis glabris lucidis ferrugineis vel ochraceis, internodiis superioribus brevissimis; stipulae caducae ca. 2 cm. longae oblongo-lanceolatae longiacuminatae; folia magna longipetiolata subcoriacea, petiolo gracili 2.5–6.5 cm. longo glabro; lamina ovalis vel late ovali-ovata 12–21 cm. longa 7.5–14 cm. lata, apice obtusissima vel rotundata, haud apiculata, basi lata et rotundata breviter angusteque cordata, sinu aperto usque 1.5 cm. alto, glabra, supra in sicco sublucida fusco-brunnescens, costa vix elevata, venis pallidis prominulis, subtus paullo pallidior brunnescens, costa crassa elevata, nervis lateralibus utroque latere ca. 10 teneris prominentibus fere rectis sed marginem versus sursum curvatis angulo lato divergentibus prope marginem bifidis et juxta marginem irregulare arcuato-junctis, venulis vix prominulis laxe reticulatis, e basi 7-nervia; receptacula sessilia geminata ca. 12 mm. longa saepe ob pressum mutuum obtuse angulata in involucro omnino inclusa glabra, apice rotundata, ostiolo parvo prominente; involucrum bilobum coriaceum receptaculum arcte involvens lucidum brunneum glabrum vel sparse minute puberulum.—Guatemala: Dept. San Marcos, Finca El Porvenir, on Potrero Matasán, along Río Cabús, Volcán de Tajumulco, alt. 1,000–1,300 meters, March 12, 1940, *Julian A. Steyermark* 37583 (type in Herb. Field Mus.).

Local name Matapalo. Leaves subcoriaceous, rich, bright green above, pale green beneath. The relationship is with *Ficus Tuerckheimii* Standl., also Guatemalan. *F. cabusana* may be only an extreme form of that species, and perhaps later will have to be united with it. It seems distinct in its much larger leaves, which are conspicuously and sometimes deeply cordate at the base.

POLYGONACEAE

Coccoloba belizensis Standl. Trop. Woods 16: 38. 1928.—One sterile collection of the species has been made in Guatemala: Dept. Izabal, between Bananera and La Presa, in Montaña del Mico, alt. 40–300 meters, *Steyermark* 38186; a tree; leaves coriaceous, stiff and brittle, rich green above, dull grass-green beneath. Previously the tree has been known only from British Honduras.

Coccoloba escuintlensis Lundell, Phytologia 1: 213. 1937.—Based upon a collection made at Escuintla, Chiapas, Mexico, this tree is now found to range rather widely in Guatemala. Most of the following collections have been determined by Dr. Lundell: Dept. San Marcos: Finca Vergel, near Rodeo, alt. 900 meters, wet forest, *Standley* 68952, 68949; a large shrub or small tree. Río Mopá, below Rodeo, alt. 600 meters, wet forest, *Standley* 68770; a large shrub.—Dept. Suchitepéquez: Near Pueblo Nuevo, alt. 750 meters, wet thicket, *Standley* 66936; a shrub.—Dept. Escuintla: Río Guacalate, alt. 600 meters, *Standley* 60190; a shrub in wet forest. Between Río Jute and Rio Pantaleón, alt. 540–720 meters, in forest or pastures, *Standley* 63488, 63464; a tree of 9–15 meters with short trunk and broad crown, common; flowers pale green. Below Las Lajas, alt. 900–1,200 meters, damp forest, *Standley* 64787; a shrub of 3 meters.

Coccoloba hirsuta Standl. Field Mus. Bot. 4: 303. 1929.—The original material was collected near Tela on the Atlantic coast of Honduras, and the tree was to be expected on the north coast of Guatemala, where two recent collections of it have been made: Dept. Izabal: Between Bananera and La Presa, in Montaña del Mico, alt. 40–300 meters, *Steyermark* 38185; a tree; leaves membranaceous, olive-green above, bronze-green beneath. Escoba, across the bay from Puerto Barrios, near sea level, wet forest, *Standley* 72945; a shrub. This species still is known only from sterile specimens, but the foliage and pubescence are quite distinctive. This and *C. belizensis* were growing together near Bananera, and there is a possibility that *C. hirsuta* may be only a juvenile state of that species, although the pubescence is so different in the two forms that this seems scarcely possible.

Rumex mexicanus Meisn. in DC. Prodr. 14: 45. 1856.—No native species of *Rumex* has been reported from Central America, and perhaps there is none, but *R. crispus* L., *R. obtusifolius* L., and *R. Acetosella* L. are all too abundantly naturalized in many regions, especially Costa Rica and Guatemala. *R. mexicanus,* although widely distributed, has not been recorded previously from Central America, but the following collections are at hand from Guatemala: Olintepeque, Dept. Quezaltenango, alt. 2,415 meters, common in old garden, *Standley* 65996. Quezaltenango, alt. 2,280 meters, common in moist field, *Standley* 66435. Dept. San Marcos, town of Tajumulco, alt. 2,300 meters, *Steyermark* 36516. It is impossible to decide whether the plants are native here or introduced, like other weedy species with which they are associated.

AMARANTHACEAE

Froelichia interrupta (L.) Moq. in DC. Prodr. 13, pt. 2: 421. 1849. *Gomphrena interrupta* L. Sp. Pl. 224. 1753.—Although apparently not especially common anywhere, the species has a wide range, from western Texas through various parts of Mexico, in the Greater Antilles, and in isolated parts of South America from Colombia to Paraguay and Chile. It has not been recorded from Central America, but two collections of it may now be placed on record: Guatemala: Dept. Zacapa, upper slopes, rocky hills in vicinity of Santa Rosalía, 2 miles south of Zacapa, alt. 200 meters, October, 1939, *Steyermark* 29307, 29026.

NYCTAGINACEAE

Allionia incarnata L. Syst. ed. 10. 890. 1759.—About 20 years ago the senior author, while riding by train through the Motagua Valley of Guatemala, observed this plant growing at one place on the railway embankment, where it was impossible to collect it. Although it has a very extensive range in the western hemisphere, from southwestern United States to Argentina, through most of Mexico, it has not been recorded from Central America until now. Guatemala: Dept. Zacapa, along railroad between La Fragua and Estanzuela, alt. 200 meters, October, 1939, *Steyermark* 29133.

PHYTOLACCACEAE

Ledenbergia macrantha Standl. Journ. Wash. Acad. Sci. 13: 350. 1923.—This tree seems to be a rare one, for it has been collected very few times, and only in Salvador. Recently it has been found in Guatemala: Dept. Guatemala, in 1940, *Ignacio Aguilar* 498.

RANUNCULACEAE

Thalictrum Johnstonii Standl. & Steyerm., sp. nov.—Herba elata ca. 60 cm. alta, caule gracili subtereti ut videtur simplici glabro viridi; folia caulina 4–5 longipetiolata decomposita, petiolo usque 14 cm. longo gracili glabro basi late dilatato et amplexicauli, vagina ca. 1.5 cm. longa; foliola numerosa parva epeltata membranacea graciliter petiolulata, petiolulis lateralibus brevibus, terminalibus magis elongatis fere filiformibus; lamina suborbicularis vel irregulare rhombea vulgo 7–10 mm. longa et 5–8 mm. lata, supra viridis glabra, venis non elevatis, subtus vix pallidior glabra sed sparse et minutissime glandulosa, breviter vel interdum fere ad medium 2–3-loba, lobis obtusissimis vel subrotundatis et minute obtuse apiculatis; flores dioeci laxe paniculati, paniculis subpaucifloris ut videtur foliis brevioribus, pedicellis fere filiformibus valde elongatis; sepala ovalia vel late elliptica 2.5–3 mm. longa glabra minute glandulosa apice rotundata viridia purpurascentia; stamina numerosa, filamentis filiformibus ca. 7 mm. longis glabris, antheris linearibus subtortis 2 mm. longis.—Guatemala: Desconsuelo, Dept. Totonicapán, June 20, 1940, *J. R. Johnston* 1643 (type in Herb. Field Mus.).

This plant grows presumably in the sparse groves of the high region (about alt. 3,000 meters) so aptly named Desconsuelo. At least on a rainy day, when the wind is blowing strongly, and drifting mist and clouds across the meadows, it would be difficult to imagine a more dreary and forbidding landscape, although it must be admitted that on a sunshiny day the aspect is considerably more pleasant. Among Guatemalan species of *Thalictrum*, *T. Johnstonii* is easily recognized by its small, glabrous, and relatively broad leaflets.

Thalictrum Standleyi Steyermark, sp. nov.—Herba elata 1.5–2.5 m. alta, caule aliquanto fistuloso striato sparse pilis laxis villoso, ad nodos densius villoso; folia magna decomposita, petiolo brevi vel elongato basi vulgo breviter in vaginam latam expanso, sparse villoso vel fere glabro, petiolulis valde inaequalibus 1–6 cm. longis; foliola numerosa magna firme membranacea epeltata ovata vel late ovata, lateralia saepe paullo obliqua, magnitudine valde variabilia, plerumque 4–10 cm. longa et 2.5–6.5 cm. lata, acuminata vel longiacuminata, basi profunde cordata vel interdum tantum truncata, sinu lato vel fere clauso usque 12 mm. alto, toto margine fere ad apicem profunde grosseque crenato, rare subtriloba, crenaturis interdum iterum crenatis vel brevissime trilobis, supra glabra intense viridia, in sicco saepius lucida, nervis venisque prominentibus et arcte reticulatis, subtus pallidiora, fere glabra sed saltem ad nervos prope basin laminae pilis paucis parvis glanduliferis onusta, nervis venisque insigniter elevatis et arcte reticulatis; flores polygamo-monoeci majusculi in paniculas magnas laxas foliaceo-bracteatas dispositi; sepala tenuia late ovata obtusa ca. 6 mm. longa sparse viscido-villosula vel fere glabra; stamina numerosa, filamentis gracillimis 5 mm. longis et ultra, antheris linearibus ca. 4.5 mm. longis apice subulato-apiculatis; achaenia juvenilia tantum visa valde asymmetrica substipitata oblique rostrata, glabra, stylo filiformi 1 cm. longo vel ultra.—Guatemala: Dept. San Marcos: Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, February 20, 1940, *Julian A. Steyermark* 36258 (type in Herb. Field Mus.). Between town of Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, shaded thickets along Quebrada Talskek, near top of barranco, alt. 1,800–2,500 meters, *Steyermark* 36821. Trail between Finca El Porvenir and San Sebastián, Volcán de Tajumulco, in *Abies* forest on upper slopes, alt. 1,300–4,000 meters, *Steyermark* 37067.—Dept. Quezaltenango: Mountains southeast of Palestina, damp, dense forest, alt. 2,700 meters, February, 1939, *Standley* 66346, 66338.

Leaves membranaceous, rich green or dull green above, gray-green or grass-green beneath and rugose; sepals green, purplish at the base; anthers pale yellow, turning purplish; filaments light green; style purple; sepals erect; anthers expanding first, the pistils later; nodes of the stem purplish.

It is impossible to suggest any particular relationship for this species, because it has no resemblance in foliage to any other member of the genus of which material has been examined. It is, in fact, probably the most distinct and easily recognized species of *Thalictrum*, and certainly the most distinctive in appearance of all American species. The leaflets are altogether unlike those of any other American *Thalictrum* in their combination of large size, deeply cordate bases, acuminate or long-acuminate apices, coarsely crenate or doubly crenate margins, and elevated, reticulate venation. The foliage somewhat resembles that of certain species of *Clematis*.

Thalictrum Steyermarkii Standl., sp. nov.—Herba erecta 2.5 m. alta fere glabra, caule crasso aliquanto fistuloso tereti glabro; folia inter maxima pinnatim decomposita longipetiolata, petiolo basi longivaginato, vagina 4.5 cm. longa et 3 cm. lata; foliola numerosissima, terminalibus usque 2 cm. longe et gracillime petiolulatis, lateralibus brevius petiolulatis, membranacea, ambitu valde variabilia, late oblonga usque late ovata vel interdum cuneato-obovata, plerumque 2–3 cm. longa et 1–2 cm. lata, obtusa et apiculata, basi rotundata usque truncata, interdum integra sed saepius breviter vel profunde triloba, supra intense viridia, glabra vel minutissime granuloso-puberula, subtus paullo pallidiora et lutescentia glabra vel sparse et fere microscopice puberula, nervis venisque prominentibus gracillimis laxe reticulatis; flores ut videtur dioeci paniculam magnam laxe multifloram foliatam efformantes, ramis gracillimis minute farinoso-puberulis vel fere omnino glabris, pedicellis capillaribus maxime elongatis plerumque 4–6 cm. longis; folliculi valde asymmetrici sessiles ca. 6 mm. longi et 2.5–3 mm. lati, basi acuti, apice in stylum filiformem usque 9 mm. longum abrupte angustati, minute puberuli vel fere glabri, grosse longitrorsum costati.—Guatemala: Dept. San Marcos, Volcán de Tajumulco, barrancos south and west of town of Tajumulco, alt. 2,300–2,500 meters, moist slopes around seepage at base of barranco, February 25, 1940, *Julian A. Steyermark* 36575 (type in Herb. Field Mus.). Wet meadow, common but sterile, Barranco Eminencia, above San Rafael Pie de la Cuesta, alt. 2,100–2,400 meters, March, 1939, *Standley* 68465. Between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, *Steyermark* 36989; on slopes along a quebrada; an herb 2.5 meters tall. Between La Vega ridge along Río Vega and northeast slopes of Volcán de Tacaná, to 3 miles from Guatemala-Mexico boundary, vicinity of San Rafael, alt. 2,500–3,000 meters, shaded banks of slopes bordering escarpment of stream, *Steyermark* 36191; an herb 1.5 meters tall. Between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, *Steyermark* 36483.—Dept. Quezaltenango: sandy *Alnus* forest, Cumbre de Tuilacán, southwest of San Martín Chile Verde, alt. 2,400 meters, March, 1940, *Standley* 67837.

Some of the collections listed are sterile, but their foliage is exactly like that of the type. The species is notable for the almost complete absence of pubescence, and more especially for the numerous, greatly elongate, and almost capillary pedicels.

MENISPERMACEAE

Disciphania calocarpa Standl. Field Mus. Bot. 4: 305. 1929. *D. coriacea* Standl. Carnegie Inst. Wash. Publ. 461: 55. 1935.—As more material of this genus accumulates from Central America, it becomes apparent that the collections are variable, and almost cer-

tainly represent a single species. The following collections are at hand: British Honduras: Río Grande, *Schipp* S458; type of *D. coriacea.*—Guatemala: Dept. Izabal: Between Escobas and Montaña Escobas, across bay from Puerto Barrios, alt. 1–100 meters, along stream, *Steyermark* 39311. South-facing lower ridges of Cerro San Gil (El Ermitaño), opposite Cayuga, alt. 30–500 meters, *Steyermark* 39493; a vine with corky bark; fruiting inflorescence pendent; fruit pale green, turning red, 1.8 cm. long, 1.5 cm. broad. Escoba, in wet forest, *Standley* 72916.—Honduras: Lancetilla Valley, Dept. Atlántida, alt. 20–600 meters, *Standley* 52817 (type of *D. calocarpa*), 54128. Foothills back of La Ceiba, Dept. Atlántida, *Yuncker, Koepper & Wagner 8799.*—Costa Rica: Tres Esquinas, Chitaría, alt. 700 meters, in 1935, *Fernando Solis* 222, 242.

Hyperbaena guatemalensis Standl. Journ. Wash. Acad. Sci. 15: 475. 1925.—The type is *Popenoe* 965, from Barranquillo, Dept. El Progreso, Guatemala. Several additional collections, all in fruit, are conspecific: Guatemala: Guastatoya, Dept. Jalapa, alt. 1,350 meters, January, 1908, *Kellerman* 7807. Dept. Chiquimula, along Río Tacó, between La Laguna and Chiquimula, alt. 500–1,000 meters, October, 1939, *Steyermark* 30742, 30754; a tree of 9–12 meters; leaves coriaceous, dark green above, the margins undulate and crisped. Local name, Grenadilla.

Hyperbaena Steyermarkii Standl., sp. nov.—Frutex scandens, caulibus crassiusculis teretibus in sicco fuscis, internodiis brevibus vel elongatis, novellis densissime pilis longis patentibus intertextis ochraceis vel sordidis tomentosis, tomento interdum deciduo; folia majuscula longe vel brevius petiolata coriacea, petiolo gracili 2–9 cm. longo dense piloso-tomentoso vel interdum glabrato, infra laminam paullo incrassato et subgeniculato; lamina fere orbicularis usque late elliptica vel oblongo-elliptica 9–14 cm. longa 4–11 cm. lata, apice rotundata et breviter cuspidato-acuminata vel sensim abrupteve acuminata, basi subtruncata usque anguste rotundata, supra in sicco fuscescens, ad nervos saltem medium pilosa, aliter glabra, subtus pallidior et saepe brunnescens ubique dense pilis patentibus velutino-pilosa, e basi 5-nervia, nervis exterioribus brevibus, 2 interioribus fere ad apicem laminae protractis, omnibus prominentibus, costa utroque latere supra medium nervos ca. 3 emittente, venis plerumque transversis et plus minusve parallelis conspicuis; flores feminei spicati, spicis dense vel subremote pauci- vel multifloris sessilibus axillaribus usque 5 cm. longis, rhachi dense pilosa, floribus arcte sessilibus; sepala 3 rotundato-ovata ca. 3 mm.

longa subpatentia obtusa, extus dense pilosulo-tomentosa, intus glabra; ovarii carpella 3 densissime fusco-pilosa.—Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up the river, on north side (right-hand side going up river), at sea level, April 14, 1940, *Julian A. Steyermark* 39454 (type in Herb. Field Mus.). Also No. 39461 from the same region.

The known Central American species of *Hyperbaena* have increased in number rapidly during the past few years. Several quite distinct types are represented among them, but many of the species are separated by rather slight characters whose value remains to be proved. The present plant, however, is conspicuously different from any reported previously, particularly in its abundant pubescence, and in its sometimes almost perfectly circular leaves. The leaves vary greatly in shape, those of the second collection cited being much narrower than in the type.

CAPPARIDACEAE

Cleome ephemera Brandeg. Proc. Calif. Acad. II. 3: 112. 1891.—The plant is a slender and rather delicate annual, noteworthy for its simple, narrowly linear leaves. It was described from southern Lower California, and several collections are at hand from the State of Guerrero, Mexico, and doubtless it grows in other states of that country. It is somewhat of a surprise to find a Lower California species extending into Central America, although not particularly remarkable, but one collection of this plant has now been made in Guatemala: Dept. Zacapa, rocky hills in vicinity of Santa Rosalía, 2 miles south of Zacapa, alt. 200 meters, October 7, 1939, *Steyermark* 29281. The flowers are yellow and brown.

SAXIFRAGACEAE

Hydrangea Steyermarkii Standl., sp. nov.—Frutex scandens epiphyticus, ramis crassis fusco-ferrugineis dense paleis linearibus crassis patentibus brunnescentibus indutis et quoque pilis stellatis brunnescentibus laxe tomentosis, internodiis plerumque brevibus; folia majuscula vel subparva petiolata coriacea, petiolo 1-1.5 cm. longo crassiusculo laxe sparseque stellato-tomentoso et sparse paleaceo; lamina cuneato-obovata usque obovato-oblonga, supra medium latissima, 6.5-17 cm. longa 3.5–9 cm. lata, apice rotundata vel obtusissima et interdum apiculata, basin versus cuneato-angustata vel interdum subobtusa et abrupte breviterque contracta, margine arcte vel remote denticulato, supra saltem in statu adulto glabra,

costa subimpressa, venis prominulis arcte reticulatis, subtus pallidior, primo sat dense pilis subadpressis intertextis ochraceis tomentosa, cito glabrata, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 9 prominentibus obliquis irregularibus supra medium furcatis, venis prominulis arcte reticulatis; inflorescentiae ut videtur plerumque axillares dense multiflorae ca. 4.5 cm. altae et 9 cm. latae, radiis 5–8 vel ultra sat dense pilis stellatis plerumque breviter stipitatis brunneis indutis, pedunculo communi ca. 1.5 cm. longo, bracteis basalibus fere 2 cm. longis latis dense brunneo-tomentosis, floribus sessilibus vel breviter pedicellatis secundis; hypanthium semiglobosum fere 3 mm. latum glabrum; sepala semiorbicularia vix ultra 1 mm. longa pallida; petala caduca.—Guatemala: Dept. San Marcos: Along Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, alt. 2,200–2,500 meters, February 18, 1940, *Julian A. Steyermark* 36044 (type in Herb. Field Mus.). Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, *Steyermark* 36250 (sterile); a liana; leaves coriaceous, dull, dark green above, pale beneath; stems chocolate-brown. Between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, forested barranco slopes of Río Tonaná, *Steyermark* 36411; sterile.

Juvenile plants of what is probably this species, but very different in appearance from adult plants, and to be recognized as belonging to the genus only by the characteristic pubescence of stellate hairs, are common in many parts of the Guatemalan Occidente, growing upon tree trunks. Flowering plants have been found but once.

In southern Central America three species of *Hydrangea* are known, but none has been reported definitely from northern Central America. The genus is known to occur also in Mexico. Whether the *Hydrangea* of southern Mexico is *H. Steyermarkii* or whether it is a distinct and undescribed species remains to be determined. It has been reported as *H. Oerstedii* Briq. and as *H. peruviana* Moric., but it is safe to assume that neither of these species ranges so far north as Mexico. *H. Steyermarkii* is related to the Costa Rican *H. diplostemona* (D. Sm.) Standl., but in that the leaves are broadest at or near the middle, and the pubescence of the branches is not at all paleaceous.

CONNARACEAE

Connarus lentiginosus Brandeg. Univ. Calif. Publ. Bot. 6: 186. 1915.—Heretofore the species has been known only from the

original material, from the region of Huitla, Chiapas, Mexico. While we have seen no authentic material, the following Guatemalan collection agrees fully with the published description: Dept. San Marcos, Río Mopá, below Rodeo, alt. 600 meters, in wet thicket, *Standley* 68790; a large vine, the flowers pale yellowish.

LEGUMINOSAE

Acacia Calderonii Standl. Journ. Wash. Acad. Sci. 13: 439. 1923. *Acaciella Calderonii* Britt. & Rose, N. Amer. Fl. 23: 99. 1928.—The type was collected near Chalchuapa, Salvador, close to the Guatemalan boundary, but heretofore the species has been known only from Salvador. Recently it has been found in Guatemala: Dept. Chiquimula, exposed, grassy slopes of Mount Tojás, near village of Sasmo, about 1 mile northwest of Chiquimula, alt. 420–520 meters, October, 1939, *Steyermark* 30203; a shrub a meter high, the flowers white. Dept. Zacapa, lower slopes of Sierra de las Minas, along trail above Río Hondo, alt. 250–900 meters, *Steyermark* 29515; a shrub of 1.5 meters, the flowers creamy white. It is probable that the plant to which this specific name is given is only a form of *Acacia polypodioides*.

Acacia Gentlei Standl. Bot. Ser. Field Mus. 22: 77. 1940.—Immediately after publication of this British Honduras species, there came to hand a second collection, from Guatemala: Dept. Izabal, Río Dulce, 2–4 miles west of Livingston, on south side (left-hand side going up river), at sea level, April, 1940, *Steyermark* 39546. A tree, the flowers pale yellow, the fruits pendent. The very numerous flower spikes are long-pedunculate, very dense, about 3 cm. long and 3.5 mm. thick. The small, peltate bracts are soon pushed aside by the expanding flowers and are scarcely if at all apparent when the corollas are open. The fruits match exactly those of the British Honduras type, being about 22 cm. long and 11 mm. wide.

Acacia polypodioides Standl. Contr. U. S. Nat. Herb. 20: 184. 1919. *Acaciella polypodioides* Britt. & Rose, N. Amer. Fl. 23: 98. 1928.—The type was collected in Chiapas, and the species has been known also from Oaxaca and Veracruz. It extends to eastern Guatemala: Dept. Chiquimula, exposed, grassy slopes of Mount Tojás, near the village of Sasmo, about 1 mile northwest of Chiquimula, alt. 420–520 meters, October, 1939, *Steyermark* 30202. A shrub a meter high, its flowers white.

Aeschynomene nicaraguensis (Oerst.) Standl. Trop. Woods 34: 41. 1933. *Brya nicaraguensis* Oerst. Kjob. Vid. Medd. 13. 1853.

A. Calderoniana Standl. Journ. Wash. Acad. Sci. 14: 93. 1924.—The type of *Brya nicaraguensis* was collected in Nicaragua, that of *Aeschynomene Calderoniana* in Salvador. The same species extends to Guatemala: Dept. Chiquimula, base of slopes along Río Grande (Río Concepción), Mt. Socorro, above Finca San José, southeast of Concepción de las Minas, alt. 1,200–1,700 meters, November, 1939, *Steyermark* 31117. A shrub 2.5 meters high; petals dull yellow, the standard striped with dull purple.

Clitoria mexicana Link, Enum. Pl. 2: 235. 1822.—Most of the Mexican and Central American Clitorias are fairly common and widely distributed, but this one is rather meagerly represented in herbaria. The species is recorded for Guatemala (Contr. U. S. Nat. Herb. 23: 494. 1922), but it is worth while to report two collections made recently in that country: Dept. Sololá, a vine on dry ridge southeast of Pueblo San Jorge, *W. R. Hatch & C. L. Wilson* 302. Dept. Zacapa, pine-covered slopes, Sierra de las Minas, along trail between Río Hondo and summit of mountain at Finca Alejandria, alt. 1,000–1,500 meters, *Steyermark* 29636; plants procumbent; leaves glaucous-silvery beneath.

Clitoria multiflora Mart. & Gal. Bull. Acad. Brux. 10, pt. 2: 188. 1843.—The species is rather widely distributed in southern and western Mexico, but has not been known heretofore from Central America. The following recent collections show that its range extends into Guatemala: Dept. Chiquimula, rocky, wooded slopes along river, Cerro Brujo, in vicinity of Río Negro, below Montaña Montenegro, near village of Brujo, alt. 1,500–2,000 meters, November, 1939, *Steyermark* 30925. Dept. Chiquimula, Montaña Castilla, vicinity of Montaña Cebollas, along Río Lucía Saso, 3 miles southeast of Quezaltepeque, alt. 1,200–1,500 meters, *Steyermark* 31258; plants sprawling; flowers whitish, with purplish stripes on the standard; leaves thin, dull green above, pale, silvery gray beneath; growing on upper part of pine-clad slope below high cliffs. Dept. Zacapa, pine forest, Sierra de las Minas, near summit of ridge below Finca Alejandria, alt. 1,700–2,000 meters, *Steyermark* 29756.

Dalbergia pacifica Standl. & Steyerm., sp. nov.—Arbor 12-metralis vel ultra, ramulis sordido-ochraceis elevato-lenticellatis subrimosis glabris vel glabratis; folia magna longipetiolata, rhachi cum petiolo gracili tereti usque 22 cm. longa; foliola usque 10 (vel ultra?) rigide et crassiuscule membranacea 4–6 mm. longe petiolulata, oblonga ad lanceolato-oblonga vel inferiora ovata, 6.5–12 cm.

longa 2.5–5 cm. lata, apicem obtusum et breviter emarginatum versus paullo angustata, basi obtusa usque late rotundata, inaequalia, inferioribus plus minusve reductis, supra in sicco fuscescentia lucida glabra, venis nervisque prominulis atque arcte reticulatis, subtus paullo pallidiora, ubique dense sed minutissime adpresso-pilosula vel fere sericea, costa tenera elevata, nervis lateralibus tenerrimis prominentibus subarcuatis angulo latiusculo adscendentibus, venis prominulis laxe reticulatis; inflorescentiae axillares racemosae vel racemoso-paniculatae, breviter pedunculatae, racemis ut videtur (in statu fructifero tantum visis) laxe paucifloris ad 6 cm. longis, pedicellis fructiferis crassis 5–8 mm. longis; legumen anguste oblongum vel lineari-oblongum 7–12 cm. longum 2 cm. latum, obtusum atque breviter mucronato-apiculatum, basi sensim vel abrupte angustatum et in stipitem 1–2 cm. longum attenuatum, inter semina interdum constrictum, glabrum, venis prominentibus arcte reticulatis; semina vulgo 1–2.—Guatemala: Roadside, Cocales, Dept. Suchitepéquez, alt. 215 meters, January 5, 1939, *Paul C. Standley* 62109 (type in Herb. Field Mus.).

Local name, Granadillo. This is another of the rather numerous cocobola trees of Central America, whose hard and fine-grained wood is employed in the United States for making knife handles and other small articles. Its closest relative is *Dalbergia lineata* Pittier, of the Pacific coast of Costa Rica, with which eventually it may have to be united. In that, however, the leaflets are very densely covered beneath with much longer hairs that are not closely appressed, and there is abundant pubescence upon the inflorescence. More ample material will be needed to determine the status of the various related forms.

Desmodium metallicum (Rose & Standl.) Standl. Field Mus. Bot. 11: 161. 1936. *Meibomia metallica* Rose & Standl. Contr. U. S. Nat. Herb. 16: 214. 1913. *Galactia nitida* Standl. Carnegie Inst. Wash. Publ. 461: 62. 1935.—The species seems to be an exceptionally distinct one, of the subgenus *Nephromeria*, noteworthy for the densely yellow-sericeous under surface of the leaflets. The type was collected at Cahabón, Alta Verapaz, Guatemala, and so far as we know, the species has been recorded only from the type specimen. The following collections are in the Herbarium of Field Museum: Mexico: Palenque, in 1895, *Allison V. Armour* 14, 15.—British Honduras: Camp 32, British Honduras-Guatemala Boundary Survey, alt. 810 meters, in forest shade, *Schipp* S680 (type of *Galactia nitida*); a vine 2.5 meters long; flowers light blue.—Guatemala:

Dept. Alta Verapaz: Finca Volcán, a vine in second growth, alt. 810 meters, *C. L. Wilson* 257.—Dept. Izabal: Río Dulce, between Livingston and 6 miles up river, on north side, at sea level, *Steyermark* 39422; a vine; leaves firmly membranaceous, rich grass-green above, gray-green beneath; calyx lilac-pink; standard and keel white, the wings violet in upper half, white along lower side. The type specimen of *Galactia nitida* bears flowers only, and not many of those, but the uncinate hairs of the stem should have referred the plant at once to its proper genus. Although no fruits are available for the British Honduras plant, the foliage indicates that it is rather certainly referable to this species of *Desmodium.*

Eriosema violaceum (Aubl.) E. Mey. Comm. Pl. Afr. Austr. 128. 1835. *Cytisus violaceus* Aubl. Pl. Guian. 766. *pl 306.* 1775.—Many *Eriosema* species have a wide range, and it is therefore not remarkable that this one should be discovered in Central America. Previously it has been found in various parts of the West Indies, in the Guianas, and in Brazil, but it has not been reported, so far as we know, from the North American mainland. Guatemala: Dept. Izabal, prairie near jungle border, between Milla 49.5 and Cristina, alt. 70 meters, *Steyermark* 38683; a shrub 1-1.5 meters tall; leaves firmly membranaceous, ascending, olive-green above, paler grass-green beneath; calyx pale green; corolla butter-yellow.

Galactia acuminata Steyermark, Bot. Ser. Field Mus. 22: 144. 1940.—Recently described from Chiapas, Mexico, this plant has been found also in Guatemala: Dept. San Marcos: Between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcán de Tajumulco, alt. 1,300-3,000 meters, *Steyermark* 37003; leaves firmly membranaceous, rich green on both sides. Forested slopes along Quebrada Talskek, between Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, alt. 1,800-2,500 meters, *Steyermark* 36840. Rocky slopes above Finca El Porvenir, along Río Cabús to within 2 miles of Cueva de las Palomas, south slopes of Volcán de Tajumulco, alt. 1,300-1,500 meters, *Steyermark* 37942.—Dept. Quezaltenango: Between Finca Pireneos and Los Positos, lower slopes of Volcán de Santa María, alt. 1,300-1,500 meters, *Steyermark* 33745; a vine in thickets. Quebrada San Gerónimo, ridge top, lower slopes of Volcán de Santa María, alt. 1,300-2,000 meters, *Steyermark* 33451.

Indigofera miniata Ortega, Dec. 98. 1798. *I. ornithopodioides* Schlecht. & Cham. Linnaea 5: 577. 1830.—The species ranges widely, from southern Texas over a large part of Mexico, besides occurring in southern Florida and in Cuba. Apparently it has not been reported from Central America, but recently it was found in Guatemala: Dept. Zacapa, rocky hills near Santa Rosalía, 2 miles south of Zacapa, alt. 200 meters, October, 1939, *Steyermark* 29274. Corolla red-orange.

Inga subvestita Standl. Bot. Ser. Field Mus. 22: 27. 1940.—Based upon a single collection from Alta Verapaz, Guatemala, the species has now been collected in another department of the same country: Dept. Izabal, between Bananera and La Presa, in Montaña del Mico alt. 40–300 meters, March, 1940, *Steyermark* 38192; a shrub, in flower; leaves chartaceous, rich green above, paler green beneath; pubescence brown.

Lonchocarpus Castilloi Standl. Trop. Woods 32: 15. 1932.—When published, only two collections were available of this species, one from Freshwater Creek Reserve, British Honduras, the other from Uaxactún, Petén, Guatemala. During the last few years a number of other collections have been made in these two countries, and the tree has been discovered in Tabasco, Mexico. Mexico: Reforma, Balancán, Tabasco, *Matuda* 3217 (determined by Lundell); a tree of 15 meters, the trunk 35 cm. in diameter.—British Honduras: El Cayo District, Cohune Ridge, advanced forest, *Lundell* 6490; local names Cabbage-bark and Manchich; a tree of 33 meters, the trunk 45 cm. in diameter. Xiabe, Corozal District, *Gentle* 850. Corozal District, *Gentle* 476; growing on high ridge; trunk 15 cm. in diameter. Without special locality, *A. Castillo* in 1933; *Castillo* 61, 83; local names Cabbage-bark and Black cabbage-bark.—Guatemala: Dept. Izabal, Escoba, across the bay from Puerto Barrios, in wet forest, *Standley* 72864 (sterile); a small tree.

Lonchocarpus Salvinii Harms, Repert. Sp. Nov. 17: 323. 1921.—The type of this unusually well marked species was collected by Salvin in 1873–74 on the Volcán de Fuego, Guatemala. A photograph and fragment of the Berlin type are in the Herbarium of Field Museum, and there is in the same herbarium an excellent specimen of the type collection. Of the several collections made of the same tree in 1938–39, some come from what is probably the type locality, the road between Antigua and Escuintla. Guatemala: Dept. Escuintla: San Antonio Jute, alt. 780 meters, dry thicket, *Standley* 64872; a large shrub or small tree, common. Below Las Lajas, alt. 900–1,200 meters, a large tree in a finca, *Standley* 64752; local name Chaperno.—Dept. Sacatepéquez: Near Las Lajas, growing in cafetales and in forest, common, alt. 1,200 meters, *Standley* 58059; a tree of 12–20 meters. The purple flowers, produced in great abundance in late November, make the tree a showy and unusually handsome one.

Lonchocarpus trifoliolatus Standl. Journ. Wash. Acad. Sci. 15: 475. 1925.—Easy of recognition because of its trifoliolate, densely and softly pubescent leaves, this tree was described from material gathered at Chalatenango, Salvador by Dr. Salvador Calderón. Conspecific is the following Guatemala collection: Dept. Zacapa, a tree along stream on slopes of arroyo, rocky hills near Santa Rosalía, 2 miles south of Zacapa, alt. 200 meters, in flower, October, 1939, *Steyermark* 29290; flowers with mixed coloring of dark and light purple. There is some probability that *L. trifoliolatus* is synonymous with *L. phaseolifolius* Benth., of Tehuantepec, Mexico.

Machaerium fruticetorum Standl. & Steyerm., sp. nov.—Frutex vel arbor 3–9-metralis, ramis gracilibus ochraceis vel fuscescentibus dense elevato-lenticellatis glabris, internodiis plerumque brevibus; stipulae cito deciduae, non visae; folia modica petiolata vulgo 6–7-foliolata, rhachi cum petiolo 6–13 cm. longa gracili subtereti glabra plus minusve flexuosa, petiolulis crassis plerumque 3–4 mm. longis, saepe prope apicem suberoso-incrassatis; foliola tenuiter coriacea anguste lanceolato-oblonga usque oblonga, vel infima interdum ovata, 4.5–9 cm. longa, vulgo 1.5–3 cm. lata, interdum paullo latiora, longe angusteque acuminata, apice ipso obtuso, basi cuneato-acuta usque rotundata, supra in sicco fuscescentia sublucida, costa anguste impressa, nervis venisque prominulis et arcte reticulatis, utrinque glabra, subtus fusco-brunnescentia sublucida, costa tenera prominente, nervis venisque prominulis atque arcte reticulatis; racemi axillares simplices in statu florifero ut videtur foliis multo breviores, rhachi gracili dense brunneo-pilosula, floribus sessilibus vel brevissime pedicellatis; legumen 6–10 cm. longum 1.7–2.5 cm. latum anguste 6–12 mm. longe stipitatum, primo ut videtur dense brunneo-sericeum, in statu adulto glabratum, laxe reticulato-venosum, subarcuatum, ala terminali apice rotundata vel obtusissima.—Guatemala: Dept. Chiquimula, between Chiquimula and La Laguna, alt. 500–1,000 meters, October 27, 1939, *Julian A. Steyermark* 30689 (type in Herb.Field Mus.). Dept. Zacapa, dry thickets near divide on road from Zacapa to Chiquimula, alt. 660 meters, April, 1939, *Standley* 71975 (sterile). Dept. Jalapa, along quebrada near Zapote, 1 mile northeast of San Pedro Pinula, alt. 1,500 meters, December, 1939, *Steyermark* 32954.—Salvador: Dept. Santa Ana, brushy hillside near Santa Ana, alt. 655–800 meters, January, 1922, *Standley* 19702.

Local name at Chiquimula, Juruguay. Evidently related to *Machaerium Pittieri* Macbr. (*M. latifolium* Pittier), and perhaps ultimately reducible to its synonymy, but in that the leaflets normally are fewer, much broader, and on relatively longer petiolules. In foliage characters the two species are so unlike that it seems probable that flowers also will supply differentiating characters, when those of *M. fruticetorum* have been collected.

Tephrosia lanata Mart. & Gal. Bull. Acad. Brux. 10, pt. 2: 48. 1843.—In Mexico this rather handsome plant is widely distributed, but it has not been noted previously for Central America. The following collections have been made in the Oriente of Guatemala: Dept. Chiquimula, pine forest, Socorro Mountain, between Finca San José and Montaña Nube, alt. 1,200–1,700 meters, *Steyermark* 30969; a shrub with buff-brown stems; flowers dark pink; leaves dark green above, soft gray-buff beneath. Dept. Jalapa, Montaña Durazno, 2 miles east of San Pedro Pinula, alt. 1,400–1,900 meters, *Steyermark* 32997; local name Choreco; plants 60–90 cm. tall, suffruticose at the base; flowers rose-purple.

Tephrosia nicaraguensis Oerst. in Benth. & Oerst. Vid. Medd. 1853: 6. 1853.—In *North American Flora* (24: 167. 1923) the species, first collected in savannas between Granada and Masaya, Nicaragua, is reported by Rydberg from Nicaragua and Costa Rica. The following Guatemalan specimens appear to be conspecific: Dept. Jutiapa, low mountains west of Jutiapa, alt. 900 meters, *Standley* 60565; growing in pine forest. Dept. Chiquimula, Caracol Mountain, about 1.5 miles north of Quezaltepeque, alt. 1,200–1,400 meters, growing in dry, open, rocky slopes in the openings of the characteristic pine woods of the region, *Steyermark* 31375.

Zollernia Tango Standl. Trop. Woods 19: 6. 1929.—The tree, known in British Honduras by the name of Tango, has been recorded for both that country and Honduras. Naturally to be expected in intervening Guatemala, it has not been collected there until recently: Dept. Izabal, Río Dulce, between Livingston and 6 miles up river, on north side (right-hand side going up river), at sea level, *Steyermark* 39391; a tree; flowers very sweet-scented, with an odor similar to that of sweet peas; petals white; calyx pale greenish white; stamens erect, white; leaves subcoriaceous, rich, dull green above, paler, dull green beneath.

OXALIDACEAE

Oxalis stenomeres Blake, Contr. U. S. Nat. Herb. 24: 8. 1922. —The type of this Guatemalan species was collected between Los Amates and Izabal, *Blake* 7791. Although we have not seen the type specimen, the following new collection evidently is conspecific: Dept. Izabal, between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, on pine slopes, *Steyermark* 38557; flowers yellow; stems wine-red-purple; leaves membranaceous, rich, dark green above, paler green beneath. The plant probably is a perennial rather than an annual, as described. The leaflets are wider than those of the type, and the petioles average much longer than described.

ERYTHROXYLACEAE

Erythroxylon fiscalense Standl. Bot. Ser. Field Mus. 22: 33. 1940.—Known previously only from the type, obtained at Fiscal, Dept. Guatemala, Guatemala. Other collections have been obtained from the same country: Dept. Chiquimula, Cerro Tixixí, 3–5 miles north of Jocotán, alt. 500–1,500 meters, dry, shrubby thickets one-fourth the way up the slopes, *Steyermark* 31661; a shrub 1.5 meters tall. Dept. Zacapa, rocky slopes near Santa Rosalía, alt. 250–300 meters, *Steyermark* 29013; a shrub of 2.5 meters; fruit carmine-red.

Erythroxylon tabascense Britton, N. Amer. Fl. 25: 66. 1907.—The range of *E. tabascense* has been known to include Tabasco and British Honduras. Only recently has it been collected in Guatemala, but there it ranges more widely than one might have expected: Dept. Izabal: Livingston, in swampy second-growth, at sea level, a low tree, *C. L. Wilson* 366. Near Puerto Barrios, wet thickets, *Standley* 73076; a shrub of 1.5 meters; leaves very lustrous; fruit bright yellow.—Dept. San Marcos: Río Mopá, below Rodeo, alt. 600 meters, *Standley* 68773; a tree of 4.5 meters, in wet forest. Finca El Porvenir, on Potrero Matasán, along Río Cabús, Volcán de Tajumulco, alt. 1,000–1,300 meters, *Steyermark* 37553; a tree of 9 meters; leaves subcoriaceous, brick-green above, paler green beneath; fruit pale green, turning orange.

RUTACEAE

Zanthoxylum foliolosum Donn. Smith, Bot. Gaz. 18: 1. 1893. *Z. suaveolens* Lundell, Amer. Midl. Nat. 20: 237. 1938.—The type of *Z. foliolosum* was collected at San Rafael, Dept. Sacatepéquez, Guatemala, on the road between Antigua and Guatemala. The following recent collections are conspecific: Mexico: Laguna Salina, Montecristo, Chiapas, *Matuda* 1933; type collection of *Z. suaveolens.*—Guatemala: Dept. Huehuetenango, bushy mountain side, Soloma, alt. 2,310 meters, *Skutch* 1038; a scrambling vine; flowers greenish white, the fruit red. Dept. San Marcos, oak forest, Puente de Nahuatl-aa, near San Marcos, alt. 2,280 meters, *Standley* 66209; a shrub of 2.5 meters. Dept. Quiché, forested barranco south of Chichicastenango, alt. 1,830–1,880 meters, *Standley* 62423; a shrub of 2 meters, common; fruit green or red. Dept. Baja Verapaz, damp forest, near the divide north of Santa Rosa, alt. 1,650 meters, *Standley* 69903; a shrub of 2.5 meters.

Zanthoxylum Harmsianum (Loes.) P. Wilson, Bull. Torrey Club 37: 86. 1910. *Fagara Harmsiana* Loes. Bull. Herb. Boiss. II. 3: 96. 1903.—A photograph of the type, *Seler* 2343, is in the Herbarium of Field Museum (Neg. 12444). The specimen was collected in the Department of Chimaltenango, Guatemala, in the region of Santa Elena on the mountains above Tecpám. There it is common, growing in the dense *Cupressus* forest which is perhaps the finest in Guatemala. Since the species is a rather rare one, it is worth while to place on record several recent collections, which indicate a rather wide range for it: Mexico: Volcán de Tacaná, Chiapas, western slopes, alt. 2,800 meters, *Matuda* 2918 (determined by Lundell).—Guatemala: Dept. San Marcos, along Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, alt. 2,200–2,500 meters, *Steyermark* 36035; a vine, climbing in a tree; flowers greenish. Dept. Chimaltenango, Cerro de Tecpám, region of Santa Elena, alt. 2,700 meters, in dense *Cupressus* forest, *Standley* 58688; a common tree or shrub of 3–6 meters. The stout prickles with which the shrub is so abundantly armed make it a most offensive obstruction in the dense thickets where it grows.

Zanthoxylum nubium Standl. & Steyerm., sp. nov.—Frutex scandens glaber, ramis gracilibus flexuosis fusco-brunnescentibus rimosis subteretibus, novellis olivaceis, internodiis brevibus; aculeis sparsis 2–3 mm. longis recurvis basi incrassatis; folia inter minora imparipinnata 7–14 cm. longa petiolata, rhachi subtereti olivacea aculeis parvis recurvis armata, supra profunde sulcata; foliola plerumque 17–21 sessilia integra, lateralia ovalia vel oblongo-ovalia 17–22 mm. longa 8–11 mm. lata obtusa, basi rotundata et interdum subinaequalia, subtus ima basi biglandulosa, supra intense viridia, costa impressa, nervis venisque obscuris, subtus pallidiora densissime minuteque puncticulata, costa gracili elevata, nervis obscuris, venis obsoletis; foliolum terminale ovato-oblongum 25–28 mm. longum subacuminatum; paniculae laterales et axillares ca. 5 cm. longae laxe pauciflorae, ramis gracilibus, pedicellis usque 12 mm. longis rectis; sepala 4 minuta; folliculi vulgo 2 subglobosi 5 mm. longi (immaturi) grosse glandulosi apice rotundati.—Guatemala: Dept. Chiquimula, cloud forest on top of Volcán de Quezaltepeque, 3–4 miles northeast of Quezaltepeque, alt. 1,500–2,000 meters, November 8, 1939, *Julian A. Steyermark* 31430 (type in Herb. Field Mus.).

The relationship is with *Z. foliolosum* Donn. Smith, in which the relatively broader but usually smaller leaflets are conspicuously crenate and almost truncate at the apex. Similar, also, is the Honduran *Z. limoniodorum* Standl., but that, too, has coarsely crenate leaflets.

POLYGALACEAE

Bredemeyera lucida (Benth.) Benn. in Mart. Fl. Bras. 13, pt. 3: 51. 1874. *Catacoma lucida* Benth. in Hook. Journ. Bot. 4: 101. 1842.—The range of this vine is discontinuous, so far as known at present. It ranges widely in Amazonian Brazil and the Guianas, then re-appears in northern Central America. Previously it has been noted from British Honduras and the Department of Petén, Guatemala. A recent collection indicates that it extends into the Department of Izabal, on the north coast of Guatemala: Between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–300 meters, *Steyermark* 38636; a shrub or a shrubby vine; leaves usually subcoriaceous, of a dark, rich green above, and of a paler, dull green beneath; fruit pale green; growing usually on the upper and drier slopes of the mountain sides.

EUPHORBIACEAE

Amanoa grandiflora Muell. Arg. Flora 55: 2. 1872.—Previously this tree has been reported in North America from British Honduras; otherwise it is known from Surinam and British Guiana. The collections cited below prove its extension to Guatemala, and it is to be expected along the Atlantic coast of southern Central America. Guatemala: Dept. Alta Verapaz: Virgin forest, Rubelpec, Finca Seamay, *C. L. Wilson* 188; a small tree.—Dept. Izabal: Near Puerto Barrios, wet thicket, a shrub, *Standley* 73119, 73120. Bank of Río Tatín, near Río Dulce, a medium-sized forest tree, *Wilson* 392. Bank of Río Dulce, a tree, *Wilson* 162. Seashore around Punta Palma, across the bay from Puerto Barrios, at sea level, *Steyermark* 39810; a small tree; leaves coriaceous, dark green above, pale green beneath.

Bernardia mollis Lundell, Contr. Univ. Mich. Herb. 4: 12. 1940.—The type was collected in the state of Chiapas, Mexico, on the northern slopes of Volcán de Tacaná, at 2,100 meters. During 1940 the same species was found in western Guatemala: Dept. San Marcos, barranco slopes between town of Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, alt. 1,800–2,500 meters, *Steyermark* 36804; a shrub of 3 meters; leaves chartaceous, dull green above, pale green beneath. The young fruits are subglobose, 1 cm. wide and slightly longer, covered with a very dense, velvety, fulvous pubescence.

AQUIFOLIACEAE

Ilex anodonta Standl. & Steyerm., sp. nov.—Frutex vel arbor usque 12 m. alta, ramulis crassis vel crassiusculis in sicco fuscis vel brunnescentibus fere omnino glabris subteretibus inconspicue lenticellatis, internodiis brevibus; stipulae usque 3.5 mm. longae lanceolatae vel subulatae deciduae; folia modica breviter petiolata coriacea, petiolo crasso 7–13 mm. longo; lamina oblonga vel elliptico-oblonga, interdum obovato-oblonga saepius prope medium latissima sed interdum apicem versus paullo latior, 6.5–10 cm. longa 2.5–3.8 cm. lata, apice breviter subacuminata vel abrupte acuta, apice ipso acuto, basi acuta vel interdum subrotundata, rarius longius angustata, margine integro et subrevoluto, glabra, supra in sicco fuscescens vel griseo-viridis, costa anguste impressa, nervis plus minusve manifestis sed non elevatis, venis obsoletis, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere 13–14 tenerrimis prominulis angulo lato abeuntibus, venis paucis obscuris vix prominulis; flores tetrameri in axillis foliorum fasciculati ca. 8, pedicellis inaequalibus vix ultra 2.5 mm. longis glabris; sepala ovato-orbicularia ca. 1 mm. longa apice latissimo minute apiculata viridescentia; corolla in alabastro globosa extus glabra 1.5 mm. alta.—Guatemala: Dept. San Marcos: Top of ridge bordering barranco of Río Tonaná, between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, February 22, 1940, *Julian A. Steyermark* 36381 (type in Herb. Field Mus.). Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, February, 1940, *Steyermark* 36285.—Dept. Quezaltenango: Along quebrada, between Finca Pireneos and Finca Soledad, lower south-facing slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–1,400 meters, January, 1940, *Steyermark* 33500; local name Cerezo.

Among the several Guatemalan species of *Ilex*, the present one is easy of recognition because of its rather large, oblong, quite entire leaves.

Ilex panamensis Standl. Field Mus. Bot. 4: 221. 1929.—While described from Panama, this species occurs commonly in the Atlantic lowlands of Honduras and British Honduras, and has been reported from those countries. It may now be recorded from the north coast of Guatemala, and also from extreme southern Mexico: Mexico: Ojo de Agua, Balancán, Tabasco, *Matuda* 3126; a tree of 5–6 meters, the trunk 30 cm. in diameter.—Guatemala: Dept. Izabal: Mouth of Río Blanco, near Livingston, *C. L. Wilson* 414; a low tree. Seashore northeast of Livingston, *Steyermark* 39739; a shrub, in flower; leaves coriaceous, dark green above, pale green beneath; petals spreading, white. Between Milla 49.5 and Cristina, alt. 70 meters, wooded margin of prairie along railroad, *Steyermark* 38404; a shrub, in fruit; leaves coriaceous; fruit pale green.

SAPINDACEAE

Cupania belizensis Standl. Trop. Woods 16: 40. 1928.—The species appears to have a rather wide range, being common in British Honduras, besides occurring in Campeche and probably also in the State of Veracruz, Mexico. It has been reported in Guatemala from Petén, and is now known to grow also in the Department of Izabal: Near Quiriguá, hilly pine forest, alt. 75–150 meters, *Standley* 72262; a shrub or small tree, common. Between Milla 49.5 and Cristina, alt. 70 meters, margin of prairie, *Steyermark* 38423; a tree of 7.5 meters; leaves subcoriaceous, rich green above, buff-brown-green beneath. Between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, *Steyermark* 38525; a tree of 7.5–13 meters; fruit olive-green; growing in lowland jungle.

RHAMNACEAE

Colubrina guatemalensis Standl. Field Mus. Bot. 8: 22. 1930. —The type is *Jesús Morales Ruano* 1230 from San Martín Jilotepeque, Dept. Chimaltenango, and the species was found by the same collector near Laguna de Amatitlán, Dept. Guatemala. The following recent specimens indicate a wide range inside Guatemala: Near Amatitlán, Dept. Guatemala, alt. 1,170 meters, dry, brushy slopes, an abundant, slender shrub, *Standley* 61347. Dept. Guatemala, *Ignacio Aguilar* 100. Near Sacapulas, Dept. Quiché, alt. 1,040–1,240 meters, dry, rocky hillsides, a slender shrub of 2–3 meters, *Standley* 62537. Concuá Bridge over Río Motagua, Dept. Guatemala, alt. 300 meters, a small, slender shrub in thicket along river, *Standley* 59324. Dept. Zacapa, dry slopes along Río Motagua, 1 mile west of Teculután, alt. 250 meters, a shrub of 4.5 meters, the flowers yellow-green, *Steyermark* 29200. Dept. Chiquimula, base of Cerro Colorado, along Río Jocotán, near Jocotán, alt. 400 meters, lower rocky slopes, *Steyermark* 31523; a shrub. Dept. Zacapa, lower slopes of Sierra de las Minas along trail above Río Hondo, alt. 250–900 meters, *Steyermark* 29518; a small tree along steep, small quebrada in barranco, in thickets.

VITACEAE

Cissus Martiniana Woodson & Seibert, Ann. Mo. Bot. Gard. 24: 191. 1937.—Described but recently from Panama, this vine of distinctive foliage already has been reported from Costa Rica and Honduras, seven specimens from those countries being in the Herbarium of Field Museum. Its range extends as far northward as Guatemala: Dept. San Marcos: Barranco Eminencia, above San Rafael Pie de la Cuesta, alt. 2,100–2,400 meters, in wet forest, a small vine, *Standley* 68675. Slopes of barrancos tributary to and bordering Río Vega, between San Rafael at northeast portion of Volcán de Tacaná and the Guatemala-Mexico border, alt. 2,500–3,000 meters, *Steyermark* 36368; climbing on dry upper slopes around the boundary line; leaves dark, rich green and shining above, pale beneath; petiole rose-colored. Between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, *Steyermark* 36435; twining around tree trunks.—Dept. Zacapa: Cloud forest in ravine bordering Quebrada Alejandria, summit of Sierra de las Minas, vicinity of Finca Alejandria, alt. 2,500 meters, *Steyermark* 29835; climbing on a tree trunk.

TILIACEAE

Sloanea ampla I. M. Johnston, Journ. Arn. Arb. 19: 124. 1938.—The type was collected on Volcán de Zunil, at 1,680 meters, *Skutch* 968, and the species was found by the same collector at Finca Moca, Dept. Suchitepéquez. The Quiché name was reported as Zulín. Several recent Guatemalan collections are at hand: Finca Pireneos, below Santa María de Jesús, Dept. Quezaltenango, alt. 1,350–1,380 meters, dense, damp forest, a frequent tree of 9–15 meters, the fruit bright red within, *Standley* 68208. Near Vuelta del Tigre, below Santa María de Jesús, alt. 1,500 meters, *Standley* 68175. Dept. Quezaltenango, along Quebrada San Gerónimo, Finca

Pireneos, alt. 1,300–2,000 meters, *Steyermark* 33419; a tree of 6 meters. Dept. San Marcos, Finca El Porvenir, Potrero Matasán, Volcán de Tajumulco, alt. 1,000–1,300 meters, *Steyermark* 37636; a tree of 24 meters; leaves firmly subcoriaceous, rich grass-green above, pale grass-green beneath; fruit brown outside, brick-red within. The Spanish names are Peine de mico and Palo de peine, in allusion to the large, bur-like fruits.

MALVACEAE

Robinsonella cordata Rose & Baker, Gard. & For. 10: 244. *f. 31*. 1897; Roush, Journ. Arnold Arb. 12: 57. *f. 6*. 1931.—In the most recent account of the genus *Robinsonella* (loc. cit.), the species is recorded only from Mexico, but it extends into central Guatemala, being common along the barrancos lying north of the Volcán de Acatenango. The following new collections of the species may be recorded: Guatemala: Dept. Chimaltenango, damp barranco above Las Calderas, alt. 1,800–2,100 meters, *Standley* 59992; a tree of 6–9 meters. Dept. Sacatepéquez, edge of barranco above Dueñas, alt. 1,600–1,800 meters, *Standley*, 63133; a tree of 6 meters. Dept. Chimaltenango, Las Calderas, *J. R. Johnston*, 1594.—Mexico: Without locality, *Sessé & Mociño* 3524. The Sessé and Mociño collection was indicated as a new species of *Sida*. The tree during its brief blooming season, in December and January, is an exceptionally beautiful one on account of its profusion of bright purple flowers.

Robinsonella edentula Rose & Donn. Smith, Bot. Gaz. 37: 417. 1904.—So far as known, this tree is confined to the region of Cobán, Alta Verapaz, Guatemala, and it is not certain whether it grows wild there, or only in cultivation. Only the type collection, *Tuerckheim* 665, has been reported, but the species is represented by *Standley* 70382, from a beautiful tree cultivated in the garden of Mrs. Hempstead at Cobán. Here the tree is called Chaqueta de novia. The flowers are very abundant, bell-shaped, and pendent. Their petals are whitish, with dark purple veins. The tree is said to grow wild in the vicinity of Cobán, and probably does, although not much reliance can be placed upon such reports.

CISTACEAE

Helianthemum chihuahuense Wats. Proc. Amer. Acad. 23: 268. 1888.—The species was based on material from the state of Chihuahua, Mexico, and has been reported also from the state of Hidalgo. In Guatemala several collections have been made:

Dept. Huehuetenango, dry, rocky hillside, Sierra de los Cuchumatanes, above Chiantla, alt. 1,950–2,550 meters, *Standley* 65609. Dept. Chimaltenango, dry oak and pine forest, near San Martín Jilotepeque, alt. 1,800 meters, *Standley* 64392. Dept. Quiché, open pine and oak forest, south of Chichicastenango, alt. 1,850–2,100 meters, *Standley* 62364. Dept. Jalapa, pine-covered slopes on hills between Güisiltepeque and Potrero Carrillo, alt. 1,800 meters, *Steyermark* 33026; on open, grassy, *Pteridium*-covered ridge; flowers yellow. In Guatemala this species is rare, in contrast with *H. glomeratum* Lag., which is extremely abundant throughout the greater part of the upland pine and oak forests.

There may be listed here two other collections of this species from Mexico, *Sessé & Mociño* 2256 and 2259. The first of these is "*Cistus ciliaris* Moc. in sched.," listed by Grosser (Pflanzenreich IV. 193: 47. 1903). The second was indicated by its collectors as a new species, under the name *maculatus*, in a genus other than *Helianthemum*.

VIOLACEAE

Orthion Standl. & Steyerm., gen. nov.—Arbores elatae glabrae; stipulae breves lataeque caducae; folia alterna vel ad apices ramorum congesta et subverticillata chartacea magna vel modica, anguste lanceolata vel oblanceolata usque oblongo-lanceolata, breviter vel brevissime petiolata, acuta vel acuminata, basin acutam vel anguste rotundatam versus angustata, adpresso-serrata vel undulata, nervis venisque prominentibus; inflorescentiae axillares, plerumque ex axillis supremis nascentes et false subumbellatae longipedunculatae, floribus in cymas laxe multifloras multiramosas corymbiformes e basi saepe multiradiatas dispositis pedicellatis vel sessilibus parvis albis, bracteis minutis; sepala parva parum inaequalia rotundata vel late ovalia apice rotundata usque acuta, basi haud producta; petalum inferum ceteris paullo majus extus puberulum, haud unguiculatum, basi interdum paullo dilatatum, apice retusum; stamina glabra, filamentis complanatis latis in tubum brevem coalitis, antheris ovalibus ecalcaratis, connectiva lata apice in appendicem brevem rotundatam protracta; stylus crassiusculus subsigmoideo-curvatus; capsula majuscula obtuse trigona elastice trivalvis 1-locularis crasse coriacea vel fere lignosa, apice obtusa vel rotundata; placentae 3 parietales, ovulis ut videtur numerosis, funiculis brevibus; semina abortu saepius ut videtur 6, interdum 3, majuscula subglobosa apice late rotundata laevia.

Type species, *Orthion subsessile* (Standl.) Standl. & Steyerm.

When the two Central American trees here referred to a new genus were first described as species of *Hybanthus*, this disposition of them was made with considerable reservation, and the receipt of further although not ample collections of one of the species has strengthened the belief that the species should not be referred to that genus. It is difficult to indicate floral details by which they differ generically from all the multiform species of *Hybanthus*, but in general appearance they are quite unlike any members of that genus, as generally treated, even some *Hybanthus* species that become fair-sized shrubs. The species of *Orthion* are not shrubs but tall trees, one of them attaining a height of 18 meters and a trunk diameter of 45 cm. The large, many-flowered, long-pedunculate inflorescences are quite unlike those of any species of *Hybanthus*, and in the latter genus the lowest and largest petal is definitely clawed, the corresponding petal in *Orthion* being sessile. It may be added that the leaves of the two species of *Orthion* are in no way similar to those of any member of the genus *Hybanthus*.

So far as now known, the genus consists of two species, restricted to the wet, lowland forests of northern Guatemala and of British Honduras.

Orthion subsessile (Standl.) Steyerm. & Standl., comb. nov. *Hybanthus subsessilis* Standl. Carnegie Inst. Wash. Publ. 461: 72. 1935.—The following collections are known: Guatemala: Jocolo, Río Perdonales, shrubby jungle, Dept. Izabal, a tree of 6 meters, *Harry Johnson* 1071, type. Dept. Izabal, between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, April, 1940, *Steyermark* 38515; a tree of 6–9 meters; leaves stiffly chartaceous, dull green above, paler, dull green beneath; fruit obtuse, 3-sided. Dept. Izabal, jungle bordering Quebrada Roseúl, lower slopes of eastern part of Cerro Santa Cruz, northeast of San Felipe, alt. 50–150 meters, *Steyermark* 39640; a tree. Dept. Izabal, along trail beginning from mile 33.23 between Dartmouth and Morales towards Lago de Izabal, Montaña del Mico, alt. 35–150 meters, by a swamp, *Steyermark* 39094; a tree of 6 meters.—British Honduras: Río Grande, in forest shade, rare, March, 1933, *Schipp* 1132. Without locality, *J. H. N. Smith* 7.

Orthion malpighiifolium (Standl.) Standl. & Steyerm., comb. nov. *Hybanthus malpighiifolius* Standl. Carnegie Inst. Wash. Publ. 461: 73. 1935.—Known only from the type: British Honduras: In forest, Camp 32, British Honduras-Guatemala boundary, alt. 630 meters, March, 1934, *Schipp* 1278.

FLACOURTIACEAE

Bartholomaea Standl. & Steyerm., gen. nov.—Arbores, ramulis gracilibus teretibus plus minusve flexuosis; stipulae minutae subulatae deciduae; folia alterna parva membranacea vel subcoriacea breviter petiolata 3–5-nervia sparse pellucido-punctata, crenato-serrata vel undulato-serrata, pubescentia vel glabrata, pilis simplicibus; flores plerumque tetrameri, interdum trimeri dioeci spicati, spicis simplicibus axillaribus solitariis dense vel sparse multifloris, floribus singulis minute basi bracteatis; sepala floris masculi 4 libera minuta suborbicularia; petala 4 sepalis similibus sed duplo vel triplo longiora; stamina vulgo 8 vel interdum ut videtur plura disco inconspicuo minuto irregulariter inserta, filamentis filiformibus elongatis glabris; antherae minutae didymae; flores feminei bene evoluti non visi, sepalis sub fructu persistentibus vulgo 4 minutis spathulato-rotundatis; stylus nullus, stigmatibus 4 vel 3 brevissimis subulatis; capsula depresso-globosa parva glabra ad medium 3–4-valvata, valvis post dehiscentiam patulis vel recurvis apice rotundatis extus dense minute transverso-rugulosis intus glabris; semina 4 vel 3 medio valvulae versus apicem inserta, subglobosa, pilis longissimis mollibus dense obtecta.

Type species, *Bartholomaea mollis* Standl. & Steyerm.

This group of Flacourtiaceae, consisting of two well marked species, is confined, so far as now known, to the coastal regions of northern Guatemala and of British Honduras. One of the species was described rather recently as a *Lunania*, principally, it seems, on account of the general appearance of its inflorescence, although the plant evidently is not closely related to that genus. The species of *Bartholomaea* do bear much resemblance to some species of the African genus *Trimeria*, but it is not believed that the relationship is very close.

The most conspicuous character of *Bartholomaea* is found in the long-pilose seeds, which seem to be unique in the family. In this connection may be recalled the genus *Gossypiospermum*, referred by some authors to *Casearia*, but in that the seeds are merely short-pubescent, rather than long-pilose.

The genus is dedicated to Bartolomé de las Casas, Protector of the Indians, one of the most admirable heroes of the Conquest. He it was who first introduced civilization to the Kekchí Indians of Verapaz, and in his voyages he must have passed more than once along the still densely forested river banks of the Río Dulce where one of the species grows.

Bartholomaea mollis Standl. & Steyerm., sp. nov.—Arbor vel arbuscula, ramulis gracilibus, novellis subferrugineis dense breviterque patulo-pilosulis, internodiis brevibus; folia membranacea breviter petiolata, petiolo 4–5 mm. longo dense pilosulo; lamina elliptico-oblonga usque ovata 4–8 cm. longa 2–3.7 cm. lata acuta vel acuminata, apice ipso subobtuso, basi plus minusve asymmetrica anguste rotundata usque acuta, remote undulato-serrata vel subintegra, remote grosseque pellucido-punctata, supra minutissime puberula, nervis venisque non elevatis, subtus paullo pallidior, praesertim ad nervos venasque pilis longiusculis patulis mollibus pilosa, e basi trinervia, nervis tenerrimis pallidis prominentibus, lateralibus longe ad tertiam superiorem laminae protractis, costa supra medium utroque latere nervos 3 emittente, venis plerumque transversis et subparallelis remotis vix prominulis; spicae masculae fere sessiles gracillimae 2.5–7 cm. longae multiflorae, rhachi pilis albidis brevibus dense pilosula, floribus arcte sessilibus, bracteis minutis sepalis aequilongis; sepala suborbicularia 0.6 mm. longa extus minutissime pilosula apice rotundata; petala ovalia glabra apice rotundata ca. 1.2 mm. longa; stamina petalis aequilonga vel paullulo longiora; capsulae valvulae ca. 2.5 mm. longae et 2 mm. latae coriaceae; semina ca. 1 mm. longa dense pilis albidis 3–4 mm. longis obtecta.—Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up the river, on north side (right-hand side going up river), at sea level, April 14, 1940, *Julian A. Steyermark* 39452 (type in Herb. Field Mus.; fruiting specimen). Bank of Río Dulce, March 27, 1939, *C. L. Wilson* 382.

Evidently this and the following species are congeneric, and much alike in most of their characters. The leaves of *B. mollis* are membranaceous, dull, and abundantly pubescent; those of *B. sessiliflora* coriaceous, lustrous, and glabrous. Other less conspicuous characters are probably of equal or greater importance.

Bartholomaea sessiliflora (Standl.) Standl. & Steyerm., comb. nov. *Lunania sessiliflora* Standl. Carnegie Inst. Wash. Publ. 461: 74. 1935.—Of this but two collections are known: British Honduras: Jacinto Hills, alt. 120 meters, a tree of 6 meters, November, 1933, *Schipp* S-606, type. West of Gales Point, a small tree on summit of limestone hill, Belize District, February, 1931, *H. H. Bartlett* 11347.

Casearia elegans Standl. in Yuncker, Bot. Ser. Field Mus. 9: 311. 1940.—Described in 1940 from the region of La Ceiba, on the Atlantic coast of Honduras, this shrub already has been found in Guatemala: Dept. Izabal, south-facing lower ridges of Cerro San

Gil, opposite Cayuga, 30–500 meters, *Steyermark* 39501; a shrub; leaves firmly membranaceous, rich green above, pale grass-green beneath; segments of the flower spreading, pale green; filaments erect, creamy white.

Hasseltia guatemalensis Warb. in Engl. & Prantl, Pflanzenfam. 3, Abt. 6a: 32. *f. 12, D, E.* 1893.—Apparently no formal description of the species has been published, it being merely mentioned casually—and illustrated—in the place cited. It is a perfectly valid and well marked member of the genus, distinguished by its usually entire leaves and the glabrous, rather than tomentose, outer surface of the sepals. What is presumably the type, in the Berlin Herbarium, *Bernoulli* 2920, from "Sta. María," Guatemala, is represented in the Herbarium of Field Museum by Negative 13648. There are various places in Guatemala with the name Santa María, but it seems likely that in this instance there is meant either the Volcán de Santa María or Santa María de Jesús, in the Department of Quezaltenango. The following specimens of the tree are at hand: Guatemala: Dept. Suchitepéquez, Finca Moca, in forest on ridge, alt. 1,320 meters, *Skutch* 2106; a tree to 21 meters in height, the trunk 30 cm. in diameter, the bark slightly rough but close, gray; flowers white. Dept. Quezaltenango, San Juan Patzulín, lower slopes of Volcán de Santa María, alt. 1,500 meters, *Steyermark* 33627; local name Canela de montaña; a tree of 12 meters, the leaves firmly chartaceous, grass-green above on young leaves, dark on older ones, grass-green beneath; petals white, the filaments buff. Dept. Quezaltenango, Finca Pireneos, lower slopes of Volcán de Santa María, alt. 1,300–1,500 meters, in cafetal, *Steyermark* 33253; a tree of 10.5 meters.—Mexico: Buena Vista, Escuintla, Chiapas, *Matuda* 1881. Siltepec, Chiapas, *Matuda* 385.

Lunania mexicana Brandegee, Univ. Calif. Publ. Bot. 6: 56. 1914.—A single species of *Lunania* has been collected in Mexico, described from Chiapas and reported also from Veracruz. Recent exploration shows that it grows also in the mountains of Guatemala, as far east as the Department of Suchitepéquez: Dept. Suchitepéquez: Finca Moca, open woods, alt. 960 meters, *Skutch* 2070; a tree of 9 meters, the flowers green. Southwestern slopes of Volcán de Zunil, vicinity of Finca Montecristo, southeast of Santa María de Jesús, alt. 1,200–1,300 meters, *Steyermark* 35251; a shrub of 3–4.5 meters.—Dept. Quezaltenango: Finca Pireneos, below Santa María de Jesús, alt. 1,350–1,380 meters, damp, dense forest, *Standley* 68221; a shrub. Lower slopes of Volcán de Santa María, between

Finca Pireneos and Los Positos, alt. 1,300–1,500 meters, *Steyermark* 33740; a tree of 9 meters; leaves rich, bright green and shining above, rich green beneath; sepals brownish brick-colored.—Dept. San Marcos: Río Ixpal, below Rodeo, alt. 750 meters, wet thicket, *Standley* 68730; a shrub.

THYMELAEACEAE

Daphnopsis ficina Standl. & Steyerm., sp. nov.—Frutex 2-metralis ut videtur dense ramosa, ramulis crassiusculis fusco-ferrugineis, novellis ferrugineis primo sparse denseve strigosis, internodiis brevibus; folia parva breviter petiolata subcoriacea, petiolo 3–4 mm. longo sparse adpresso-piloso; lamina elliptica vel oblongo-elliptica, interdum oblongo-lanceolata, plerumque 3–5 cm. longa, 1–2.3 cm. lata, obtusa vel saepius apicem obtusum versus aliquanto angustata, basi acuta vel basin versus sensim angustata, interdum abrupte contracta et breviter in petiolum decurrens, supra pallide viridis glabra, nervis venisque prominulis et laxe reticulatis, sublucida, subtus pallidior, primo pilis sparsis adpressis conspersa, in statu adulto glabra, costa tenera prominente, nervis lateralibus utroque latere ca. 8 solemniter inaequalibus et irregularibus prominentibus prope marginem irregulariter junctis, venis paucis prominulis reticulatis; inflorescentiae femineae laterales ca. 6-florae, pedunculis simplicibus 1–2 cm. longis sparse vel dense strigosis vel sericeis glabrescentibus, floribus apice umbellatis, pedicellis crassiusculis vel gracilibus usque 5 mm. longis; perianthii tubus urceolatus fere 3 mm. longus extus dense sericeus, lobis 4 patulis suborbicularibus ca. 1.3 mm. longis apice rotundatis intus minute puberulis vel fere glabris; fructus ut videtur subglobosus fere glaber ca. 1 cm. longus vel paullo brevior.—Guatemala: Dept. Guatemala, in forests of Manzanote (*Olmediella Betschleriana*), La Cienaguilla, San José Pinula, alt. 1,600 meters, January, 1932, *Jorge García Salas* 1442 (type in Herb. Field Mus.).

Local name Chilillo. The relationship is with *Daphnopsis Bonplandiana* (Kunth) Standl., which, as now interpreted, is a fairly common shrub of the Guatemalan mountains. In that the leaves are normally much larger and relatively narrower, and the peduncles usually much longer. The leaves of *D. ficina* suggest those of some species of *Ficus*, such as *F. padifolia* HBK., a fact to which the specific name alludes.

Daphnopsis retifera Standl. & Steyerm., sp. nov.—Frutex 3-metralis, ramulis crassiusculis subteretibus brunneis vel fusco-brunneis dense pilis ochraceis subadpressis vel fere patentibus longius-

culis pilosis, internodiis brevibus; folia modica breviter petiolata subcoriacea, petiolo crasso 5–8 mm. longo dense adpresso-piloso; lamina anguste elliptico-oblonga vel lanceolato-oblonga, interdum oblanceolato-oblonga, 7–11 cm. longa 2–4 cm. lata apicem obtusum versus paullo angustata, basin angustam versus longe sensimque attenuata, supra in sicco lucida glabra vel tantum ad costam sparse breviterque adpresso-pilosa, costa subimpressa, nervis obsoletis, subtus paullo pallidior ubique sat dense pilis subpatulis mollibus pilosa, costa gracili elevata, nervis lateralibus utroque latere ca. 8 obliquis angulo ca. semirecto adscendentibus gracilibus prominentibus, venulis insigniter prominentibus et arcte reticulatis; inflorescentiae (perfectae non visae) axillares vel laterales, floribus arcte sessilibus capitatis, pedunculis simplicibus subrecurvis ca. 3 cm. longis dense adpresso-pilosis.—Guatemala: Dept. Jutiapa, dry plateau in chaparral between railroad station of Mita and town of Asunción Mita, alt. 650 meters, November 13, 1939, *Julian A. Steyermark* 31758 (type in Herb. Field Mus.).

Although the single available specimen is imperfect, consisting of leafy branches with peduncles from which the flowers have fallen, it is clear that it represents a quite distinct and undescribed species. The leaves are distinctive, almost completely glabrous and lustrous on the upper surface, densely velvety-pilose beneath, and with very conspicuous and closely reticulate venation.

Daphnopsis Selerorum Gilg, Verh. Bot. Ver. Brandenb. 58: 153. 1917.—The type is *Seler* 2866 from forests of Yalambohoch, Distr. Nentón, Dept. Huehuetenango, Guatemala. Although we have seen no authentic representation of the species, the following specimens agree perfectly with Gilg's detailed description: Guatemala: Dept. Quezaltenango: Lower south slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–1,500 meters, *Steyermark* 33642; a shrub of 3 meters; fruit rich green, shining, ovoid; leaves firmly membranaceous, rich, dark green above, grass-green beneath. Between Finca Pireneos and Finca Soledad, lower slopes of Volcán de Santa María, alt. 1,300–1,400 meters, forested slopes near the summit, *Steyermark* 33526; a tree of 7.5 meters; berries black, shining, at first green. Along Quebrada San Gerónimo, Finca Pireneos, alt. 1,300–1,400 meters, *Steyermark* 33428; called Palo de chonta; a tree of 6 meters; berries ovoid, acute at the apex. Finca Pireneos, alt. 1,350 meters, damp, dense forest, *Standley* 68337. Near Calahuaché, alt. 1,020 meters, a shrub in damp forest, *Standley* 67129.

COMBRETACEAE

Bucida macrostachya Standl. Field Mus. Bot. 4: 240. 1929. —The type was collected at El Rancho, Dept. Progreso, Guatemala in 1907, *Kellerman* 7744. The species has been re-collected recently in the same country: Dept. Zacapa, rocky slopes between San Pablo and Pepezca, alt. 200–250 meters, October, 1939, *Steyermark* 29358. A tree of 4.5 meters; flowers white.

MYRTACEAE

Psidium rotundifolium Standl. Field Mus. Bot. 8: 318. 1931. —Only the type specimen, obtained at All Pines, British Honduras, has been known previously. One Guatemalan collection seems to represent the species: Dept. Jutiapa, grassy, open places along railroad between Agua Blanca and Amatillo, alt. 950–990 meters, *Steyermark* 30374. A shrub 30 cm. high.

MELASTOMACEAE

Blakea bella Standl. Bot. Ser. Field Mus. 22: 94. 1940.—Additional collections of this handsome tree may be recorded: Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up the river, on north side (right-hand side going up river), at sea level, April, 1914, *Steyermark* 39450; a tree; leaves subcoriaceous, mottled rich green with darker green above, pale green beneath and with yellow, stellate scales; flowers very sweet-scented, the petals spreading, fleshy, rose-pink with white margins; anthers all on one side, golden yellow; style white. Along trail beginning from mile 33.23 between Dartmouth and Morales towards Lago de Izabal, Montaña del Mico, alt. 35–150 meters, *Steyermark* 39082; a tree of 9–15 meters; leaves subcoriaceous, rich grass-green above, pale green beneath; foliaceous outer bracts spreading; calyx lobes ascending. Base of waterfall, jungle between Escobas and waterfall, across the bay from Puerto Barrios, alt. 20–50 meters, *Steyermark* 39852; calyx tube in fruit deep rose-red.

Blakea Purpusii Brandeg. Univ. Calif. Publ. Bot. 6: 58. 1914.—*Blakea Purpusii* is apparently the northernmost representative of its genus, which is only moderately well represented in Central America. The type was collected by Purpus on Cerro del Boquerón, Chiapas. The species extends into the Occidente of Guatemala, where it is rather common. Mexico: Mount Tacaná, Chiapas, alt. 2,000–4,035 meters, *Matuda* 2328.—Guatemala: Dept. Quezaltenango: Slopes and ridges between Quebrada Chicharro and Montaña

Chicharro, southeast slopes of Volcán de Santa María, alt. 1,300–1,400 meters, *Steyermark* 34347; leaves firmly subcoriaceous, rich, bright green above, pale green and rugose beneath.—Dept. San Marcos: Barranco Eminencia and vicinity, wet forest, alt. 2,100–2,700 meters, *Standley* 68466, 68543, 68670; a tree about 6 meters tall, common. Between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, along bed of stream tributary to Río Suchiate, *Steyermark* 36454; leaves dark, rich green and shining above, gray-green beneath, brown on the nerves; petals waxy, erect, olive-green. Between town of Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, alt. 1,800–2,500 meters, *Steyermark* 36793; a tree of 9 meters; petals green. Slopes of barrancos tributary to and bordering Río Vega, between San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, *Steyermark* 36370; a tree to 18 meters in height.

Mouriria exilis Gleason, Carnegie Inst. Wash. Publ. 522: 370. 1940.—This recently published species was described from British Honduras, seven collections being cited. It has been found also in nearby Guatemala, and two additional British Honduras collections may be reported: British Honduras: In jungle, Mullins River road, alt. 15 meters, *Schipp* 70; a tree of 12 meters, the trunk 22 cm. in diameter; flowers white, sweet-scented, rose-colored in bud. Stann Creek Valley, frequent in pine-hardwood transition, *J. B. Kinloch* 207; a small tree, 6 meters high, the trunk 10 cm. in diameter.—Guatemala: Jocolo, Alta Verapaz, *Harry Johnson* in 1921. Tree on bank of Río Dulce, Dept. Izabal, *C. L. Wilson* 407. Dept. Izabal, between Livingston and 6 miles up river, on north side (right-hand side going up river), at sea level, *Steyermark* 39435; a tree; leaves subcoriaceous, dark green above, dull, paler green beneath; calyx tube salmon-buff, the lobes spreading, buff-yellowish; petals white, with pink tips, ovate; filaments white, the anthers golden yellow. Dept. Izabal, seashore around Punta Palma, across the bay from Puerto Barrios, at sea level, *Steyermark* 39842; petals white with deep orchid-rose midrib; a small tree. Dept. Izabal, between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, *Steyermark* 38487; a tree of 9 meters.

Mouriria Steyermarkii Standl., sp. nov.—Arbor praeter flores omnino glabra, ramis gracilibus sed rigidis teretibus rimosis brunnescentibus vel lutescentibus, internodiis elongatis; folia arcte sessilia magna in sicco coriacea oblongo-ovata 10.5–17 cm. longa 5–7.5 cm.

lata acuminata, basi rotundata et breviter cordata, amplexicaulia, supra in sicco olivacea sublucida, utrinque dense tuberculoso-pustulata, costa supra non elevata, nervis prominulis, subtus multo pallidiora, costa prominente, nervis obscuris; flores cymosi terminales, cymis sessilibus paucifloris 2 cm. longis, ramis pedicellisque minute puberulis, pedicellis ad 5 mm. longis, bracteis parvis latissime ovatis acutis puberulis; calyx 7 mm. longus campanulatus basi acutiusculus minute puberulus, limbo breviter lobato, lobis late rotundatis; petala in alabastro 6 mm. longa apice obtusa vel rotundata, extus minutissime puberula vel fere glabra.—Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up the river, on north side (right-hand side going up river), at sea level, April 14, 1940, *Julian A. Steyermark* 39446 (type in Herb. Field Mus.).

"Petals whitish. Buds greenish white in lower half, dull rose in upper. Pedicels rose-red. Leaves subcoriaceous, dark green above, pale green beneath." From other large-leaved *Mouriria* species of the general region this is distinguishable at once by its rather deeply cordate, clasping leaves and terminal flowers.

CLETHRACEAE

Clethra Johnstonii Standl. & Steyerm., sp. nov.—Ramuli crassi fusci teretes, novellis obtuse angulatis densiuscule pubescentibus, internodiis abbreviatis; folia modica breviter petiolata firme membranacea vel subcoriacea, petiolo 1–1.5 cm. longo crassiusculo puberulo vel glabrato; lamina oblongo-oblanceolata vel anguste oblanceolata 7–11.5 cm. longa 2–4 cm. lata, apice rotundata vel late obtusa et apiculata, basin versus longe sensimque cuneato-attenuata, supra in sicco olivacea glabra vel glabrata, costa nervisque subimpressis, subtus viridis et fere concolor, sparse et minutissime stellato-puberula, costa gracili elevata, nervis lateralibus utroque latere ca. 17 obliquis fere rectis angulo semirecto adscendentibus, venis prominulis laxe reticulatis; racemi plures ad apicem rami fasciculati sessiles vel breviter pedunculati usque 17.5 cm. longi, laxe multiflori, rhachi gracili stellato-pilosula, pedicellis 5–8 mm. longis patulis vel subrecurvis stellato-tomentulosis; sepala ca. 3 mm. longa extus dense minuteque stellato-tomentella lanceolato-ovata acuta vel subacuminata ciliata; stylus crassiusculus glaber sepalis paullo longior; ovarium dense stellato-tomentosum.—Guatemala: Dept. Guatemala, Volcán de Pacaya, above Las Calderas, May 20, 1938, *J. R. Johnston* 1255 (type in Herb. Field Mus.). Dept. Guatemala, in 1940, *Ignacio Aquilar*.

The species is an unusually well marked one for the genus, distinguished by the combination of very obtuse leaves, green and almost glabrous on the under surface, and long-pedicellate flowers.

Clethra Pachecoana Standl. & Steyerm., sp. nov.—Arbor 6–15-metralis et ultra dense ramosa, ramulis crassis ferrugineis vel fuscis dense foliatis, internodiis abbreviatis, novellis dense sordideque ferrugineo-tomentellis; folia parva petiolata coriacea, petiolo crassiusculo vulgo 6–12 mm. longo sordide tomentuloso; lamina oblanceolato-oblonga vel obovato-oblonga vulgo 4.5–7 cm. longa et 1.2–3 cm. lata, apice obtusissima vel subrotundata et apiculata, interdum subacuta, basin versus angustata, ima basi subacuta usque truncata, margine basali utroque latere abrupte ad paginam inferiorem laminae recurvato, margine laminae saepius integro vel obscure undulato, sed in laminis ramulorum sterilium saepe argute serrato, lamina supra glabra, in sicco fusco-brunnescente, costa nervisque subimpressis, subtus paullo pallidior ut videtur viridis sed re vera tomento minuto fere microscopico et arctissime adpresso induta, costa nervisque glabratis brunneis, costa gracili prominente, nervis lateralibus utroque latere ca. 10 teneris prominulis fere rectis angulo semirecto vel paullo latiore adscendentibus; racemi pauci vel numerosi ad apicem rami fasciculati vel interdum breviter paniculati usque 10 cm. longi ca. 8 mm. lati sessiles vel breviter pedunculati densissime multiflori, rhachi crassiuscula dense minute brunneo-stellato-tomentella, pedicellis crassis vix ultra 1.5 mm. longis saepius recurvis; sepala 2.5 mm. longa extus minute brunneo-tomentella obtusa oblongo-ovata; petala alba sepalis paullo longiora obovata ciliata; stylus crassiusculus glaber; capsula depresso-globosa 3–3.5 mm. lata minute stellato-tomentulosa.—Guatemala: Dept. Sacatepéquez: Damp forest, slopes of Volcán de Agua, above Santa María de Jesús, alt. 2,250–3,000 meters, February 11, 1939, *Paul C. Standley* 65123 (type in Herb. Field Mus.).—Dept. Guatemala: Open forest, Volcán de Pacaya, above Las Calderas, alt. 2,250 meters, November, 1938, *Standley* 58333.—Dept. Chimaltenango: Region of Las Calderas, wet forest, alt. 1,800–2,100 meters, November, 1938, *Standley* 57807, 57781. Slopes of Volcán de Acatenango, above Las Calderas, alt. 2,400–2,700 meters, in dense, wet *Chiranthodendron* forest, January, 1939, *Standley* 61823; local name Escobo. Chichavac, alt. 2,550 meters, a large forest tree, common, November, 1933, *Skutch* 701.

Clethra Pachecoana is not closely related to any other described species of Mexico or Central America. The principal distinguishing

characters are the small, almost glabrous, coriaceous leaves, and the small, short-pedicellate flowers. The leaves of vigorous sterile branches are closely and sharply serrate, being thus very unlike the quite entire ones of flowering branches. Similar variation in leaf margins is not infrequent, apparently, in other members of the genus.

This handsome tree is named for Don Mariano Pacheco Herrarte, of the Dirección General de Agricultura of Guatemala, whose beautiful and extensive live collections of tropical plants are a source of pleasure each year to thousands of visitors.

Clethra Skutchii Standl. & Steyerm., sp. nov.—Arbor 10–22-metralis, trunco usque 32 cm. diam., ramulis crassis plus minusve nodosis fuscis, junioribus brunneis pilis brevibus patentibus hispidulis, internodiis valde abbreviatis; folia modica petiolata firme membranacea vel subcoriacea, petiolo gracili 1.2–2 cm. longo puberulo vel fere glabro; lamina oblanceolato-oblonga usque oblongo-obovata 8–13 cm. longa 3.5–7 cm. lata, apice rotundata usque subacuta, saepe abrupte apicata, basin versus vulgo plus minusve angustata, basi ipsa cuneata vel rarius late obtusa, supra in sicco fusco-brunnescens fere glabra, saepe minute puncticulato-asperata, costa nervisque subimpressis vel fere planis, subtus cinerea fere ubique tomento minutissimo arctissime adpresso obtecta, costa nervisque glabratis brunnescentibus, costa tenera elevata, nervis lateralibus utroque latere ca. 14 teneris prominentibus fere rectis angulo semirecto vel saepius latiore adscendentibus, venis fere obsoletis, margine integro vel inconspicue undulato; racemi ad apicem ramuli fasciculati 3–6 sessiles vel breviter pedunculati usque 13 cm. longi et ca. 1 cm. lati dense multiflori, rhachi minute stellato-pubescente, pedicellis crassis vix ad 2 mm. longis; sepala ca. 2.5 mm. longa ovato-oblonga extus minute stellato-tomentulosa acutiuscula subrecurva; petala alba obovata sepalis paullo longiora ciliata; stylus glaber crassus sepalis paullo longior.—Guatemala: Dept. Quezaltenango: In forest, Palmar, alt. 1,350 meters, October 14, 1934, *Alexander F. Skutch* 1453 (type in Herb. Field Mus.); a tall, narrow-crowned tree; flowers fragrant. Volcán de Santa María, between Santa María de Jesús, Las Mojadas, and summit of volcano, alt. 1,500–3,000 meters, January, 1940, *Steyermark* 33934.

The Skutch collection was distributed as *Clethra macrophylla* Mart. & Gal. That is a Mexican species which differs in its relatively lax pubescence of much larger, soft hairs. In *C. Skutchii* the indument of the lower leaf surface is closely appressed and almost lepidote in appearance.

PYROLACEAE

Pyrola angustifolia (Alef.) Hemsl. Biol. Centr. Amer. Bot. 2: 283. 1881. *Thelaia angustifolia* Alef. Linnaea 28: 52. 1856. *P. Liebmannii* Lange, Vid. Medd. 1867: 113. 1868.—Described from Mount Orizaba, Mexico, the plant seems to be rare, for it is known from but few specimens, collected in the states of Veracruz, Puebla, and Oaxaca. Its range is now known to extend to western Guatemala: Dept. Quezaltenango, shrubby pine slopes near the summit of Volcán de Zunil, alt. 3,800 meters, January, 1940, *Steyermark* 34828. Stems purplish; leaves firmly membranaceous, dull, dark green above, paler beneath.

Pyrola secunda L. Sp. Pl. 396. 1753. *Actinocyclus secundus* var. *elatior* Lange, Vid. Medd. 1867: 115. 1868. *Ramischia elatior* Rydb. N. Amer. Fl. 29: 29. 1914. *R. secunda* var. *elatior* Andres, Repert. Sp. Nov. 19: 217. 1923.—The var. *elatior* seems to be separable by no definite character, unless geographic, from the ordinary, widespread forms of the species as it is distributed elsewhere in North America. *Ramischia elatior* was reported by Rydberg only from the region of Mount Orizaba, Mexico, and *R. secunda* was not recorded by him south of the Mexican border. The following collections show that *Pyrola secunda* has a wider range in Mexico, and extends also into northern Central America: Mexico: Nuevo León, Cerro Potosí, east face of peak, on mossy side of narrow canyon, under dense shade of *Abies*, alt. 3,000 meters, July, 1938, *Richard A. Schneider* 1042. In canyon, below Las Canoas, Cerro Potosí, abundant on wet, moss-covered banks, July, 1935, *C. H. Mueller* 2218. Las Cruces, Distrito de Temascaltepec, Mexico, alt. 3,350 meters, in *Abies* forest, September, 1932, *Geo. B. Hinton* 1716.—Guatemala: Volcán de Agua, July, 1937, *J. R. Johnston* 894. Dept. Quezaltenango, Volcán de Zunil, alt. 2,500–3,800 meters, moist, steep banks at base of cliff, January, 1940, *Steyermark* 34775. Dept. Quezaltenango, uppermost ridge to summit of Volcán de Zunil, alt. 3,000–3,800 meters, dry pine woods near the summit, *Steyermark* 34853.

ERICACEAE

Arctostaphylos cratericola Donn. Smith, Bot. Gaz. 55: 437. 1913. *A. pungens* HBK. var. *cratericola* Donn. Smith, op. cit. 15: 13. 1891.—Captain Smith cited this probably endemic Guatemalan species only from the crater of the Volcán de Agua, where he obtained the type. It has been collected there also by Kellerman and by Dr. J. R. Johnston, but it occurs also on some of the other high mountains of the country: Volcán de Acatenango, alt. 2,400 meters, *Kellerman* 6606. Dept. Huehuetenango, Sierra de los Cuchumatanes, alt. 3,270 meters, September 14, 1934, *Skutch* 1231; a creeping shrub, covering rocks with a dense mat; flowers white; berries bright red, tasteless; unseasonal bloom, most of the plants now in fruit. Dept. Quezaltenango, summit of Volcán de Zunil among rocks and grasses, alt. 3,800 meters, *Steyermark* 34832; local name given as Abril; leaves dark grass- or rich green above, pale green beneath; stems green to coral-red in the upper part; corolla urceolate, creamy white, rose-red at the tip.

Vaccinium leucanthum Schlecht. Linnaea 8: 524. 1833.—In Mexico the species ranges rather widely, although apparently it is seldom collected. It has been found recently in Central America, the determination of the collection having been made by Dr. W. H. Camp: Guatemala: Mountains southwest of Malacatancito, Dept. Huehuetenango, pine and oak forest, alt. 1,800–2,400 meters, January, 1939, in flower, *Standley* 62612. A shrub 1–1.5 meters high, with white flowers. The shrub was abundant in the locality at which it was found, but was noted nowhere else, in spite of the general uniformity of the region in which it was collected.

THEOPHRASTACEAE

Jacquinia paludicola Standl. Field Mus. Bot. 11: 138. 1932.—Several collections are known from British Honduras, whence the species was described. Several collections, evidently conspecific, attest its extension to Guatemala: Dept. Izabal: Between Escobas and Montaña Escobas, across the bay from Puerto Barrios, at or near sea level, *Steyermark* 39293, 39295; a shrub or tree; leaves chartaceous or coriaceous, rich green above, pale silvery beneath. Between Bananera and La Presa in Montaña del Mico, alt. 40–300 meters, *Steyermark* 38118; a shrub of 3–4.5 meters. Jungle bordering Quebrada Roseúl, lower slopes of eastern part of Cerro Santa Cruz, northeast of San Felipe, alt. 50–150 meters, *Steyermark* 39641; a shrub.

EBENACEAE

Diospyros yucatanensis Lundell, Carnegie Inst. Wash. Publ. 478: 217. 1937.—When published, a single collection was cited for the species, *Lundell* 3237 from Lago de Petén, near San Andrés, Petén. The following collections now available indicate that the range of the tree is rather wide: Mexico: Tabasco: Tenosique, in advanced forest, *Matuda* 3401; a tree of 5 meters. San Isidro, Balancán, in virgin forest, *Matuda* 3378; a tree of 15 meters, the trunk 35 cm. in diameter (determined, like the preceding collection, by Lundell).—Guatemala: Dept. Baja Verapaz: San Agustín, Sierra de las Minas, *Kellerman* 8001. Sierra de las Minas, opposite El Rancho, alt. 690–750 meters, *Kellerman* 7640, 7990.—Dept. Petén: Lake Petén, San Andrés, *Lundell* 3237 (type collection). Lake Petén, *Lundell* 3194. La Libertad, *Lundell* 3560.—Dept. Chiquimula, Caracol Mountain, 1.5 miles north of Quezaltepeque, alt. 1,200–1,400 meters, *Steyermark* 31396; a tree of 6 meters; fruit green, subglobose; growing in open chaparral on grassy, rocky slopes.—Dept. Izabal: Bay of Santo Tomás, between Escobas and Santo Tomás, at sea level, *Steyermark* 39366; a tree. Río Dulce, between Livingston and 6 miles up river, on north side (right-hand side going up river), at sea level, *Steyermark* 39427; a tree; calyx dull, pale green; corolla creamy white, the tips of the lobes recurved. The distribution of the species within Guatemala is rather unusual, so much so that one might suspect that more than a single species was represented, but all the material now at hand appears to be conspecific, and must be so treated unless further collections reveal distinguishing characters.

Diospyros zacapana Standl. & Steyerm., sp. nov.—Arbuscula 4.5 m. alta, ramulis sat gracilibus subteretibus cinereis dense elevato-lenticellatis ut videtur primo sparse strigosis cito glabratis, internodiis brevibus; folia modica breviter petiolata subcoriacea, petiolo crassiusculo 7–10 mm. longo sparse strigoso vel fere glabro; lamina ovalis vel elliptico-ovalis, interdum elliptico-ovata, 9–13 cm. longa 4.5–7 cm. lata apice obtusa usque rotundata et brevissime apiculata, basi saepe inaequilatera obtusa vel rotundata, supra in sicco sublucida glabra, costa anguste subimpressa, venis prominulis, subtus fere concolor, cinereo-brunnescens, fere omnino glabra, costa gracili prominente, nervis lateralibus utroque latere ca. 9 teneris irregularibus angulo lato divergentibus prominentibus remote a margine arcuato-junctis, venulis prominulis laxe reticulatis; calyx ca. 12 mm. latus et 5 mm. longus breviter 4-lobus extus sparse scaberulus vel fere glaber, intus fulvo-sericeus; fructus globosus glaber basi et apice rotundatus, ca. 18 mm. diam.—Guatemala: Along stream below waterfall, Dept. Zacapa, Sierra de las Minas, trail between Río Hondo and waterfall, alt. 250–400 meters, October 10, 1939, *Julian A. Steyermark* 29490 (type in Herb. Field Mus.).

"Leaves membranaceous, dull green above, paler green beneath." This species is a relative of *Diospyros Yatesiana* Standl., which is conspicuously different in its acute or acuminate leaves.

STYRACACEAE

Styrax vulcanicola Standl. & Steyerm., sp. nov.—Arbor 15-metralis, ramulis crassis nodosis subangulatis, dense tomento stellato minuto indutis, pilis ferrugineis vel pallidis sessilibus; folia magna petiolata firme membranacea, petiolo crasso 2–2.5 cm. longo dense adpresseque stellato-tomentello; lamina elliptica vel oblongo-elliptica vulgo 16–20 cm. longa et 8–11 cm. lata, apice late obtusa vel subrotundata, basi late cuneato-obtusa, margine integro vel tantum undulato, supra in sicco viridis, fere omnino glabra, tantum ad costam basesque nervorum stellato-tomentosa, venulis prominulis arcte reticulatis, subtus griseo-viridis ubique tomento denso subadpresso arcte induta, pilis minutis, costa crassiuscula elevata, nervis lateralibus utroque latere ca. 10 teneris prominentibus irregularibus angulo recto vel paullo latiore adscendentibus, venis prominentibus arcte reticulatis; paniculae axillares laxe pauciflorae pauciramosae vix ad 5 cm. longae crasse pedunculatae, pedicellis crassis 5–8 mm. longis dense minute adpresso-stellato-tomentosis; calyx globoso-campanulatus 5 mm. altus basi obtusus, margine remote et brevissime repando-denticulato, extus ubique dense minuteque stellato-tomentellus; corolla 4-loba in alabastro tantum visa extus dense adpresso-stellato-tomentella.—Guatemala: Dept. San Marcos, between town of Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, alt. 1,800–2,500 meters, February 27, 1940, upper, dry slopes on ridge, *Julian A. Steyermark* 36801 (type in Herb. Field Mus.).

The most closely related species is the recently described *Styrax magnus* Lundell, of the Volcán de Tacaná, Chiapas. In that the shape and size of the leaves suggest *S. vulcanicola*, but the pubescence consists of much larger, relatively lax, soft, spreading hairs, making it fairly certain that two distinct species, as species of *Styrax* are divided, are represented.

OLEACEAE

Linociera domingensis (Lam.) Knobl. Bot. Centralbl. 61: 87. 1895. *Chionanthus domingensis* Lam. Tabl. Encycl. 1: 30. 1791. —The tree appears to be common in many parts of the Greater Antilles. Two collections of it are at hand from British Honduras. It has not been recorded heretofore from Guatemala, but the following collections, from widely separated and dissimilar regions, seem to represent it: Dept. Izabal, Lake Izabal, on shore, *Harry Johnson* 1285; a shrub with white flowers. Dept. Quezaltenango, in cafetal, Finca Pireneos, lower slopes of Volcán de Santa María, alt. 1,300–

1,500 meters, *Steyermark* 33262; a tree of 9 meters; leaves dark and shining above; flowers white. Dept. Izabal, between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, *Steyermark* 38505, 38536; a tree of 9–12 meters, common in jungle; flowers white, with erect corolla lobes; leaves dull green above, paler green beneath.

Linociera oblanceolata Robinson, Proc. Amer. Acad. 49: 504. 1913.—The species was described from British Honduras, and has been collected several times in that country. It occurs also in the Department of Petén, Guatemala. There may be recorded here two recent collections, one from a new region of Guatemala, the other from extreme southern Mexico. Guatemala: Dept. Izabal, Río Dulce, *C. L. Wilson* 167; a tall shrub on river bank.—Mexico: La Palma, Balancán, Tabasco, June, 1939, *Matuda* 3284; a tree 4 meters high, the trunk 15 cm. in diameter; fruit purple. This and *L. domingensis* are much alike, but with flowering specimens, especially, it is easy to distinguish them. The petals of *L. oblanceolata* are exceedingly narrow, almost filiform, while those of *L. domingensis* are rather broadly linear and flat.

LOGANIACEAE

Strychnos Peckii Robinson, Proc. Amer. Acad. 49: 504. 1913. —Previously known only from the forests of British Honduras, this well marked species has been found recently in Guatemala: Dept. Izabal: Near Puerto Barrios, wet thicket, at sea level, *Standley* 73049. Near Entre Ríos, wet forest, alt. 18 meters, *Standley* 72591. Between Virginia and Lago de Izabal, Montaña del Mico, alt., 50–500 meters, *Steyermark* 38873. The notes accompanying the last collection are as follows: A vine; fruit the size of an apple, buff outside, white within; leaves coriaceous, rich, dull green above, pale green beneath, the young leaves rich, light green above; calyx pale green; corolla tube pale yellowish green, the lobes buff-yellow, inside buff yellowish with white hairs at the base.

Strychnos tabascana Sprague & Sandw. Kew Bull. 1927: 128. 1927; Hook. Icon. *pl. 3223*. *S. panamensis* var. *hirtiflora* Standl. Field Mus. Bot. 11: 138. 1932. *S. hirtiflora* Lundell, Bull. Torrey Club 64: 556. 1937.—The type of *S. panamensis* var. *hirtiflora* was collected in British Honduras (*Schipp* S301); that of *S. tabascana* at San Sebastián, Tabasco, Mexico. The species is known at present from Tabasco and British Honduras, but it is probable that sterile specimens from Guatemala and perhaps also from Honduras represent this species, rather than *S. panamensis* Seem., to which they have been referred. Plants of this genus are plentiful throughout most of the lowlands of Central America, but it is unusual to find them in bloom, at least during the winter months. The following new collections of *S. tabascana* may be placed on record: British Honduras: El Cayo District, Cocquericot, Belize River, on trees at river edge, a woody vine, the flowers whitish, fragrant, *Lundell* 6095. Maskall, *Gentle* 1210.—Mexico: La Palma, Balancán, Tabasco, a woody vine in advanced forest, the flowers yellowish white, *Matuda* 3285.

GENTIANACEAE

Curtia tenella (Mart.) Cham. Linnaea 8: 13. 1833. *Schuebleria tenella* Mart. Nov. Gen. & Sp. 2: 117. 1827.—A small and rather tenuous plant, easily overlooked where it grows among grasses, commonly in savannas or in pine forest, and on that account, probably less often collected than its actual occurrence might warrant. It grows in Honduras and Panama, and far southward in South America, and has been reported (in Mart. Fl. Bras.) from the state of Oaxaca, Mexico. One collection may be cited from Guatemala: Dept. Chiquimula, dry, rocky, open places, Montaña Castilla, vicinity of Montaña Cebollas, along Río Lucía Saso, 3 miles southeast of Quezaltepeque, alt. 1,200–1,500 meters, November, 1939, *Steyermark* 31218. Corolla white.

Leiphaimos lutea Morton, Journ. Wash. Acad. Sci. 27: 310. 1937.—The type was collected near El General, Costa Rica, at 1,130 meters, and no other material has been reported. Specimens collected in Guatemala agree perfectly with a photograph of the type and with the original description: Dept. Chiquimula, Cerro Tixixí, 3–5 miles north of Jocotán, alt. 500–1,500 meters, *Steyermark* 31580. Dept. Izabal, lowland jungle at Punta Palma, across the bay from Puerto Barrios, *Steyermark* 39862. Stems white, the corolla tube yellow or creamy white, the lobes rich yellow.

Lisianthus auratus Standl. Trop. Woods 37: 29. 1934.—Known heretofore only from the type, collected at Siguatepeque, Honduras, at 1,110 meters. It occurs also in Guatemala: Dept. Chiquimula, Cerro Tixixí, 3–5 miles north of Jocotán, alt. 500–1,500 meters, in ravine near summit, November, 1939, *Steyermark* 31603. A shrub as much as 2.5 meters high; corolla tube yellow, the lobes erect, greenish outside; leaves thin, glabrous, somewhat succulent, dark green above, and paler green beneath.

Lisianthus calciphilus Standl. & Steyerm., sp. nov.—Suffrutex ramosus glaber, ramis subtetragonis gracilibus viridibus, internodiis plerumque foliis brevioribus; folia inter minora breviter petiolata in sicco crassa, petiolo crasso alato usque 4 mm. longo; lamina ovata usque oblongo-lanceolata 3–4.5 cm. longa 1–2 cm. lata acuminata vel longiacuminata, basi obtusa vel abrupte contracta et acuta, supra sublucida, costa impressa, nervis occultis, subtus fere concolor, costa tenera prominente, e basi triplinervia, nervis aliis lateralibus nullis; flores ut videtur lutei cymoso-corymbosi, corymbis foliatis vel bracteatis subdense multifloris 9–11 cm. longis et ultra, bracteis omnibus foliaceis, superioribus multo reductis et linearibus vel subulatis, floribus vulgo umbellato-aggregatis, pedicellis erectis angulatis rigidis plerumque 5–8 mm. longis; calyx ca. 7 mm. longus adpressus angulatus fere ad basin lobatus, segmentis lineari-lanceolatis longe angusteque attenuatis; corolla 30–34 mm. longa, tubo striato-costato supra ovarium paullo constricto, orem versus sensim dilatato, apice 4 mm. lato, lobis suberectis ovali-ovatis ca. 6 mm. longis breviter caudato-acuminatis; stamina tubo corollae paullo longiora, stylo exserto.—Guatemala: On limestone cliff, Finca Los Alpes, Dept. Alta Verapaz, alt. 1,200 meters, March 22, 1939, *C. L. Wilson* 356 (type in Herb. Field Mus.).

Closely related to *L. collinus* Standl., but in that species of British Honduras the leaves have two evident pairs of nerves on each side, and the inflorescence is sparsely flowered, with some of the pedicels becoming greatly elongate.

Lisianthus elatus Standl. & Steyerm., sp. nov.—Herba erecta elata glabra 1–1.5 m. alta ramosa, caulibus teretibus viridibus crassis, internodiis foliis longioribus; folia magna sessilia plerumque lanceolato-oblonga 9–14 cm. longa 3–4 cm. lata subito longe angusteque acuminata, basi obtusa, supra viridia, costa subsulcata, nervis occultis, subtus pallidiora, costa elevata, nervis lateralibus utroque latere 2 prominentibus pallidis angulo angusto adscendentibus; folia floralia multo minora late ovata; flores in cymas densas multifloras congesti, cymis paniculam elongatam latamque grandem efformantibus longipedunculatis, ramis cymae brevibus secundifloris, pedicellis crassis vix ad 2 mm. longis; calyx arcte adpressus 6–8 mm. longus ad medium vel interdum profundius lobatus, segmentis lanceolato-attenuatis; corolla in sicco straminea lucida 25–28 mm. longa in statu fructifero persistens, tubo valde costato supra ovarium constricto, fauce ca. 4 mm. lato, lobis erectis rotundo-ovatis 2.5–3 mm. longis apice abrupte apiculatis; stamina inclusa; stylus breviter

exsertus; capsula lanceolato-oblonga 8 mm. longa obtusa lucidissima, ut videtur in statu vivo viscida.—Guatemala: Base of pine slopes around rocks and seepage, Dept. Izabal, between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, April 1, 1940, *Julian A. Steyermark* 38562 (type in Herb. Field Mus.).

"Leaves membranaceous, rich green above, pale green beneath; calyx pale grass-green; corolla tube yellow-green, the lobes erect-ascending, pale green; anthers pale yellow; stigma pale green." The most closely related species is *Lisianthus collinus* Standl., described from the Jacinto Hills of British Honduras. That, however, has a lax inflorescence with scattered flowers, some of which are borne on greatly elongate pedicels.

APOCYNACEAE

Odontadenia caudigera Woodson, Ann. Mo. Bot. Gard. 23: 384. 1936.—Described from British Honduras and, so far, reported only from that country. Two collections are at hand from Guatemala: Dept. Izabal: Near Entre Ríos, wet thicket, *Standley* 72707; a small vine; corolla greenish yellow. Between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, *Steyermark* 38492; a vine in jungle thickets; leaves firmly membranaceous, rich green above, paler grass-green beneath; corolla tube pale greenish outside. The species is very closely related to *O. grandiflora* (Mey.) Miq., so much so that it is doubtful whether both can be maintained. According to Dr. Woodson's key in *North American Flora* (29: 166. 1938), some of the Costa Rican material would seem referable to *O. caudigera.* The two species are separated by corolla size, and this is exceedingly variable in the series of specimens examined by the writers.

Tonduzia longifolia (A. DC.) Woodson, N. Amer. Fl. 29: 122. 1938. *Rauwolfia longifolia* A. DC. in DC. Prodr. 8: 338. 1844.—The species has a wide range, being reported by Woodson (loc. cit.) from Veracruz and Oaxaca, Salvador, and Costa Rica. The following collections represent distribution in two other countries, and the species is to be expected, of course, in Nicaragua: Honduras: Pito Solo, Lake Yojoa, Dept. Comayagua, alt. 600 meters, a tree of 18 meters in dense, tropical forest, the flowers white, *J. B. Edwards* P-448.—Guatemala: Dept. Quezaltenango, above, Santa María de Jesús, alt. 1,650 meters, *Standley* 67272, 67185; a shrub of 3 meters. Dept. Guatemala, near Finca La Aurora, alt. 1,500 meters, *Ignacio Aguilar* 213; local name Chilindrillo. Dept. Escuintla, near Escuintla, alt. 135–300 meters, *Standley* 63942; a shrub of 2 meters. Dept. Escuintla, along Río Guacalate, alt. 500 meters, damp thicket, *Standley* 58242; a shrub or small tree. Dept. Escuintla, near Las Lajas, dry thicket, *Standley* 63417. Dept. Quezaltenango, slopes of Volcán de Santa María, between Finca Pireneos and Los Positos, alt. 1,300–1,500 meters, *Steyermark* 33723; a tree of 7.5–15 meters, growing scattered in a cafetal.

Tonduzia macrantha Woodson, Ann. Mo. Bot. Gard. 24: 12. 1937.—The type is *Skutch* 871, from Volcán de Zunil, Dept. Quezaltenango, Guatemala, at 1,650 meters. One additional collection, in flower, may be cited: Guatemala: Dept. San Marcos, barrancos 6 miles south and west of town of Tajumulco, northwestern slopes of Volcán de Tajumulco, alt. 2,300–2,800 meters, February, 1940, *Steyermark* 36624. A tree of 9 meters; leaves firmly membranaceous, rich grass-green above, pale blue-green beneath.

Vallesia flexuosa Woodson, Ann. Mo. Bot. Gard. 24: 14. 1937.—In *North American Flora* (29: 140. 1938) the species is said to be known only from the type locality, Zarcero, Costa Rica, where it was first collected by Brenes. The following recent collections add some information to what was previously known about the species: Costa Rica: Zarcero, alt. 1,950 meters, April, 1937, *Austin Smith* 4101; a small tree of scattered distribution; none seen more than 10 cm. in trunk diameter; flowers white; fruits 25 mm. long and 15 mm. thick, pale cream-colored when ripe; sap of tree sticky, colorless; trunk gray-brown. Zarcero, alt. 1,710 meters, September, 1937, *Smith* A386; a large shrub, the bark light brown, granulated; here gregarious as an undergrowth; leaves moderately lustrous; emitting a milky sap; main flowering period in May, again coming into flower in September. Zarcero, alt. 1,650 meters, January, 1938, *Smith* H148; a shrub of 3 meters, with several basal stems, the bark very dark brown; corolla waxy white.

Vallesia mexicana Muell. Arg. Linnaea 30: 393. 1860.—In *North American Flora* (29: 141. 1938) the species is reported from the Mexican states of Veracruz, Puebla, and Jalisco. The following collections indicate a substantial extension of range: Mexico: Volcán de Tacaná, north slope, alt. 2,100 meters, Chiapas, *Matuda* 2977.—Guatemala: Volcán de Acatenango, *Kellerman* 4821. Dept. Sacatepéquez, above Las Calderas, alt. 1,800 meters, in damp barranco, *Standley* 59960; a tree of 9–12 meters; fruit white. Dept. San Marcos, dry barranco slopes, vicinity of town of Tajumulco, Volcán de Tajumulco, alt. 2,300–2,800 meters, *Steyermark* 36907; local name

San Pedro Martín; a tree of 12 meters; leaves firmly membranaceous, dark green and shining above, paler green beneath; flowers fragrant; corolla tube greenish white, the lobes spreading; fruit 2.5 cm. long, oblong.

CONVOLVULACEAE

Aniseia cernua Moric. Pl. Nouv. Amér. 56. 1838. *A. ensifolia* Choisy, Mém. Soc. Phys. Genève 8: 66. 1838. *Jacquemontia chiapensis* Brandeg. Univ. Calif. Publ. Bot. 6: 60. 1914.—Heretofore only two species of *Aniseia* have been recognized in Mexico and Central America, *A. mexicana* Loes. of Chiapas, noteworthy for its ovate-cordate leaves, and *A. martinicensis* (Jacq.) Choisy. The latter has a wide distribution in South America, from Colombia and the Guianas through much of Brazil and eastern Peru, and it occurs in the West Indies, at least in Martinique. In Central America it is known, so far as available specimens show, from Costa Rica and Panama. An attempt to determine a plant of recent collection in Guatemala reveals the fact that the plant of northern Central America and southern Mexico is a different species, and apparently *A. cernua* Moric., in which the outer sepals are truncate or broadly rounded at the base and not decurrent upon the pedicels. In *A. martinicensis* the outer sepals are acutish at the base and conspicuously decurrent. There is some doubt as to the specific value of these characters, but the two species have been recognized generally. There is a bare possibility that the plants of Central America and Chiapas represent a distinct species, although no differentiating characters are apparent in the series of specimens studied. If such should prove to be the case, the name *Jacquemontia chiapensis* is available for the species. It may be added that the plant of Cuba that has been referred to *A. martinicensis* is apparently *A. cernua;* at least, it is not *A. martinicensis*. The following collections of *A. cernua* from Mexico and Central America may be cited: Mexico: Tonalá, Chiapas, *Purpus* 6916, type collection of *Jacquemontia chiapensis.*—British Honduras: All Pines, open forest, at sea level, rare, a vine of 2 meters, the flowers white, *Schipp* S145.—Guatemala: Near San José, Dept. Escuintla, at sea level, moist thicket, a small, herbaceous vine, *Standley* 64229. Dept. Jutiapa, Lago de Güija, southeast of Asunción Mita, alt. 470–500 meters, in grassy places about margin of the lake, *Steyermark* 31818. Dept. Jutiapa, Lago de Atescatempa, south of Asunción Mita, alt. 500–800 meters, along lake margin in dry soil, *Steyermark* 31856; creeping; leaves grass-green, the corolla white. A sterile specimen from the Department of Yoro, Honduras, probably is referable to this species and not to *A. martinicensis*.

Breweria sulphurea Brandeg. Univ. Calif. Publ. Bot. 4: 384. 1913.—The type is *Purpus* 5998 from Baños del Carrizal, Veracruz, Mexico, and no other material is known to the writers except the following recent collection: Guatemala: Dept. Zacapa, rocky slopes between San Pablo and Pepezca, alt. 200–250 meters, October, 1939, *Steyermark* 29337. Climbing in thickets; corolla white; leaves dull olive-green above, yellow-green beneath. The genus is new for Central America.

Ipomoea heptaphylla (Rottl. & Willd.) Voight, Hort. Sub. Calc. 360. 1845. *Convolvulus heptaphyllus* Rottl. & Willd. Neue Schrift. Ges. Nat. Fr. 4: 196. 1803.—The plant is a rather curious one, well marked among North American *Ipomoea* species by its elongate, very slender, coiled tendrils and by its 5-parted leaves. For an account of its distribution and of its occurrence in the United States see Charles Baehni, Rhodora 38: 164. 1936. In tropical continental North America the species has been reported only from Tuxpeña, Campeche, Mexico, but it may now be recorded for Central America: Guatemala: Dept. Jutiapa, potreros between Trapiche Vargas and Asunción Mita, alt. 500–600 meters, November, 1939, *Steyermark* 31864; creeping; leaves dull green above; corolla lilac. Dept. Zacapa, trail between Río Hondo and waterfall, Sierra de las Minas, alt. 250–400 meters, *Steyermark* 29498; climbing in open thickets on dry slopes; corolla purple above, white below.

POLEMONIACEAE

Cobaea Steyermarkii Standl., sp. nov.—Herba gracilis scandens, caule tenui tantum prope nodos sparse breviterque villosulo, aliter glabro, internodiis bene elongatis; folia sessilia plerumque 4-foliolata, interdum 6-foliolata, rhachi gracili sparse breviterque villosula vel paullo puberula, saepe fere glabra; foliola tenuiter membranacea graciliter petiolulata oblonga usque ovato-oblonga vel obovato-oblonga 2.5–5 cm. longa 1.2–2.2 cm. lata acuta vel acuminata et mucronata, basi plus minusve inaequali truncata vel subcordata, glabra; pedunculi gracillimi usque 22 cm. longi glabri vel prope apicem sparse minute puberuli; sepala fere libera lineari-lanceolata longe angusteque attenuata ca. 2 cm. longa et basi 4 mm. lata glabra; corolla campanulata 2 cm. longa 1.7 cm. lata extus supra medium sparse breviterque villosula, lobis late triangularibus subobtusis tubo plus quam duplo brevioribus; filamenta ut videtur longiexserta;

capsula anguste ellipsoidea lucida basi et apice acutiuscula glabra sessilis 4.5 cm. longa 1.5 cm. lata.—Guatemala: Dept. San Marcos, a vine in thickets on Loma Corona, 9 miles northwest of El Porvenir, southwest-facing slopes of Volcán de Tajumulco, alt. 1,300–2,000 meters, March 14, 1940, *Julian A. Steyermark* 37759 (type in Herb. Field Mus.).

"Leaves thin, dull green above, paler green beneath and suffused with purplish; calyx lobes in anthesis pale green with purple margins and purple streaks, erect in anthesis, reflexed in fruit; corolla pale green at first, yellow in anthesis." The species is noteworthy for the unusually small flowers. It is perhaps related to *C. Viorna* Standl., also of the Department of San Marcos, but in that the corolla is 3.5–4 cm. long.

VERBENACEAE

Clerodendron fragrans (Vent.) R. Br. f. **pleniflorum** (Schauer) Standl. & Steyerm., stat. nov. *C. fragrans β pleniflora* Schauer in DC. Prodr. 11: 666. 1847.—In Central America this is a common garden plant that has become thoroughly naturalized in many regions. Apparently only the "double-flowered" form is known in the region. This has usually been termed a variety, but obviously deserves status only as a mere form.

Rehdera mollicella Standl. & Moldenke, Repert. Sp. Nov. 39: 51. 1935.—The type is *Kellerman* 7992 from El Rancho (erroneously given as "Raucho" in the original publication), "Baja Verapaz," Guatemala. El Rancho is now in the Department of Progreso. Several additional collections of the species have been made recently: Guatemala: Dept. Chiquimula, rocky slopes, base of Cerro Colorado, along Río Jocotán, near Jocotán, alt. 400 meters, November, 1939, *Steyermark* 31547. Dept. Jutiapa, dry plateau in chaparral between railroad station of Mita and town of Asunción Mita, alt. 650 meters, November, 1939, *Steyermark* 31754; a tree 6–7.5 meters tall; leaves coriaceous. Dept. Zacapa, top of rocky slopes on edge of bluff, between San Pablo and Pepezca, alt. 200–250 meters, *Steyermark* 29352. Dept. Zacapa, dry, rocky slopes bordering Río Motagua, vicinity of Pepezca, alt. 170–200 meters, *Steyermark* 29323; a tree of 7.5 meters; fruit brown-purple.

SOLANACEAE

Capsicum lanceolatum (Greenm.) Morton & Standl., comb. nov. *Brachistus lanceolatus* Greenm. in Donn. Sm. Bot. Gaz. 37:

212. 1904.—Based on *J. D. Smith* 1837 from Chucaneb, Alta Verapaz, Guatemala, at 1,850 meters. The following recent collections extend considerably the known range of the species: Guatemala: Dept. Quezaltenango: In forest, Palmar, alt. 1,290 meters, *Skutch* 1450; a shrub a meter high, the flowers white. Finca Pireneos, below Santa María de Jesús, alt. 1,350–1,380 meters, damp, dense forest or thickets, *Standley* 68235, 68244, 68294; a shrub a meter high; corolla yellowish white; fruit tomato-red. Quebrada San Gerónimo, Finca Pireneos, lower slopes of Volcán de Santa María, alt. 1,300–2,000 meters, *Steyermark* 33357; local name, Yerba de pajarito; a shrub of 1.5 meters, the leaves thin, paler beneath.—Dept. Sacatepéquez: Near Pastores, alt. 1,560–1,650 meters, damp ravine, *Standley* 59930. Barranco above Dueñas, damp forest slope, alt. 1,590–1,800 meters, *Standley* 63153. An erect shrub of 2 meters, or a small, slender tree.

Capsicum meianthum (Donn. Sm.) Standl. & Steyerm., comb. nov. *Brachistus meianthus* Donn. Sm. Bot. Gaz. 57: 424. 1914.—The type is *Tuerckheim* 1134 from Pansamalá, Verapaz, Guatemala, and *Tuerckheim* 3936 from Panzal, Baja Verapaz, also was listed with the original description. The following collections represent the species: Guatemala: Dept. Quezaltenango, in forest clearing, Volcán de Zunil, alt. 1,680 meters, August, 1934, *Skutch* 969. Dept. Quezaltenango, along Quebrada San Gerónimo, Finca Pireneos, lower southern slopes of Volcán de Santa María, alt. 1,300–2,000 meters, *Steyermark* 33408; local name Flor del río; a shrub of 1.5–2 meters; corolla lobes cream-colored; leaves thin, dull, dark green above. Dept. San Marcos, above Finca El Porvenir on Todos Santos Chiquitos, lower southern slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, on upper slopes *Steyermark* 37168; a shrub of 3 meters.

Capsicum tetramerum Standl. & Morton, Bot. Ser. Field Mus. 18: 1045. 1938.—Based upon a single collection from El General, Costa Rica. The following collection was determined by Mr. C. V. Morton: Guatemala: Dept. Escuintla, damp thicket along Río Guacalate, alt. 600 meters, December, 1938, *Standley* 60210. Suffrutescent, 1.5 meters high; corolla pale yellow.

Lycianthes chiapensis (Brandeg.) Standl. Field Mus. Bot. 11: 173. 1936. *Solanum chiapense* Brandeg. Univ. Calif. Publ. Bot. 6: 192. 1915.—So far as we know, the species proper is known only from the type collection, *Purpus* 7328 from Finca Irlanda, Chiapas. However, *Purpus* 7166 from Cerro del Boquerón, Chiapas, was distributed by Brandegee as "*Solanum chiapense* Brandg.? var.?" His perplexity as to the disposition to be made of the second collection is duplicated by that of the present writers, now that several additional collections of the same form have been made in Guatemala. Typical *Lycianthes chiapensis* is quite glabrous throughout. The specimens cited below differ in having a sparse but evident pubescence of rough, stellate hairs. There seem to be no other differences between the two forms, except that the leaves of the variety are slightly broader, on the average, and somewhat more obtuse at the apex. Further material may show that two distinct species are represented, but it appears more probable that the form here described as a variety deserves no higher rank than that now assigned to it.

Lycianthes chiapensis var. **sparsistellata** Standl. & Steyerm., var. nov.—A forma typica speciei non differt nisi foliis aliquanto latioribus lanceolato-oblongis usque oblongo-ellipticis 4–9.5 cm. longis 2–4 cm. latis, apice subrotundatis usque longiuscule acuminatis, supra sparse pilis rigidis breviter stipitatis stellatis conspersis, subtus sparse vel dense pilis parvis pauciradiatis breviter stipitatis vel fere sessilibus conspersis; rami sparse vel dense stellato-hirtelli vel interdum fere glabri; calyx pedicellique pilis parvis sessilibus vel breviter stipitatis pauciradiatis sparse vel dense conspersi.—Guatemala: Dept. Chiquimula, Cerro Tixixí, 3–5 miles north of Jocotán, alt. 500–1,500 meters, slopes of cloud forest on top, adjacent to barranco, November 10, 1939, *Julian A. Steyermark* 31555 (type in Herb. Field Mus.); a shrub of 3 meters; leaves thin, dark green above; berries green. Dept. Zacapa, cloud forest, summit of Sierra de las Minas, vicinity of Finca Planados, alt. 2,500 meters, *Steyermark* 29970; a vine. Dept. Quezaltenango, Montaña Chicharro, lower south-facing slopes of Volcán de Santa María, 2–4 miles south of Santa María de Jesús, alt. 1,400–1,500 meters, *Steyermark* 34284; a scandent shrub 6 meters long; leaves membranaceous, dull green above, grass-green beneath; fruit orange, oblong-obovoid, 1 cm. broad.—Mexico: Cerro del Boquerón, Chiapas, June, 1914, *C. A. Purpus* 7166.

Lycianthes ocellata (Donn. Smith) Morton & Standl., stat. nov. *Solanum sideroxyloides* Schlecht. var. *ocellatum* Donn. Smith, Bot. Gaz. 14: 28. 1889. *Lycianthes sideroxyloides* (Schlecht.) Bitter, subsp. *ocellata* Bitter, Abh. Nat. Ver. Bremen 24: 405. 1919.—This plant differs so conspicuously from *L. sideroxyloides*, as indicated by Captain Smith when he assigned it varietal rank, that there is no question that a fully distinct species is represented. The type was

collected at Pansamalá, Alta Verapaz, Guatemala, alt. 1,140 meters, *J. D. Smith* 1155. The following Guatemalan collections represent the species: Chihob, Alta Verapaz, alt. 900 meters, along trail, *Harry Johnson* 913. Near Cobán, Alta Verapaz, wet pine forest, alt. 1,260–1,440 meters, *Standley* 69180; common; a shrub 1.5 meters high. The berries are red.

Solanum Muenscheri Standl. & Steyerm., sp. nov.—Frutex inermis ramosus, ramis crassiusculis subteretibus viridibus ubique dense pilis minutis stellatis fere microscopicis tomentellis, internodiis brevibus; folia modica singula petiolata herbacea, petiolo crassiusculo 8–15 mm. longo minute stellato-tomentello; lamina lineari-lanceolata 6–11.5 cm. longa 1–2 cm. lata apicem angustum acutum versus longe sensimque attenuata, basi obtusa vel rotundata, integra, fere concolor, utrinque densissime pilis minutis sessilibus cinereis dense induta, costa tenera subtus prominula, nervis lateralibus numerosis inconspicuis angulo lato divergentibus; inflorescentiae laterales extra-axillares racemosae vel umbellato-racemosae pluriflorae vel multiflorae foliis vulgo multo breviores breviter pedunculatae vel sessiles, floribus umbellatis, umbellis paucifloris breviter pedunculatis, pedicellis plerumque 8–15 mm. longis post anthesin reflexis sursum incrassatis, densissime pilis ochraceis ramosis sessilibus vel pro parte stipitatis tomentosis; calyx 5–6 mm. longus in statu fructifero paullo accrescens densissime stellato-tomentosus ad medium lobatus, lobis ovatis vel late ovatis erectis obtusis; corolla ut videtur alba ca. 7 mm. longa extus dense stellato-tomentosa ad medium vel profundius lobata, lobis oblongo-ovatis obtusis vel acutiusculis patentibus, intus sparse tomentellis; antherae oblongae apice retusae 3 mm. longae; ovarium sparse saltem ad apicem stellato-pilosulum; bacca globosa glabra lucida ca. 1 cm. diam.—Guatemala: Dept. Sololá, mountain slope near Santa María, alt. 3,150 meters, April 14, 1937, *W. C. Muenscher* 12360 (type in Herb. Field Mus.). Dept. San Marcos, dry, grassy plateau flat along road between San Sebastián at km. 21 and km. 8, 8–18 miles northwest of San Marcos, alt. 2,700–3,800 meters, *Steyermark* 35633; a shrub about 3 meters high; corolla deep lavender-purple; anthers light yellow; leaves, when fresh, dark green on the upper surface, gray-green on the lower surface.

It is impossible to suggest any close relationship for this well marked and somewhat isolated species. It is noteworthy for the long and very narrow leaves, grayish in appearance because of the abundant indument of minute, branched hairs.

Solanum Rovirosanum Donn. Smith, Bot. Gaz. 48: 297. 1909. —The species was based upon two collections, *Tuerckheim* 8716 from Cubilgüitz, Alta Verapaz, Guatemala, and *Rovirosa* 544 from Mayito, Tabasco, Mexico. Several new collections are at hand, the first two determined by Mr. C. V. Morton: Tabasco: San Isidro, in advanced forest, a shrub with white flowers, *Matuda* 3359.—Guatemala: Dept. Quezaltenango, wet forest, Fuentes Georginas, western slope of Volcán de Zunil, alt. 2,850 meters, *Standley* 67473; also No. 67492; a shrub of 3 meters, the corolla white. Dept. San Marcos, above Barranco Eminencia, alt. 2,700 meters, *Standley* 68502.

Solanum verapazense Standl. & Steyerm., sp. nov.—Frutex 1.5 m. altus, ramis crassiusculis tortuosis subteretibus, vetustioribus cinereis, junioribus brunneis dense stellato-tomentosis, pilis mollibus multiradiatis fulvis longe vel breviter stipitatis diutius persistentibus, internodiis brevibus, ramis armatis, aculeis 5–10 mm. longis rectangule divergentibus vel leviter recurvis brunnescentibus vel stramineis, basi valde dilatatis et compressis glabris lucidis; folia parva singula breviter petiolata herbacea, petiolo crasso 5–8 mm. longo interdum prope basin aculeo 1 longo crasso onusto, dense ut ramis stellato-tomentoso; lamina ovata vel oblongo-ovata 3.5–7 cm. longa 1–4 cm. lata, subacuta usque acuminata, basi obtusa vel subrotundata, integra vel interdum breviter sinuato-lobata, supra viridescens aliquanto glandulosa sat dense molliterque stellato-pilosa, pilis pluriradiatis sessilibus vel pro parte breviter stipitatis, radio centrali ceteris subaequali, subtus fulva densissime stellato-tomentosa, pilis fere omnibus longistipitatis, lamina subtus prope basin aculeo 1 elongato onusta; inflorescentiae oppositifoliae 1–3-florae vel interdum pluriflorae, foliis duplo breviores inermes, pedunculo usque 7 mm. longo, pedicellis crassis tomentosis et glandulosis vix ultra 3 mm. longis; calyx angustus basi acutus 4 mm. longus extus viscide stellato-tomentosus, ad medium lobatus, lobis ovatis vel lanceolatis acutis vel acuminatis erectis; corolla alba 1 cm. longa fere ad basin lobata, segmentis oblongis obtusis extus dense stellato-hispidulis, intus fere glabris; antherae 4–5 mm. longae sursum paullo angustatae.—Guatemala: Dept. Baja Verapaz, dry, rocky hills north of Santa Rosa, in forest of pine and oak, March 30, 1939, *Paul C. Standley* 69756 (type in Herb. Field Mus.).

The relationship is obviously with *S. yucatanum* Standl. of the Yucatan Peninsula, but in that the pubescence is relatively close and appressed, not at all like the dense and soft covering of chiefly long-stipitate, much interlaced hairs found in *S. verapazense*.

SCROPHULARIACEAE

Pedicularis mexicana Zucc. ex Bunge, Bull. Phys. Math. Petrop. 1: 384, 1843.—The species seems not to have been reported from Central America, but it was collected recently in Guatemala: Dept. Quezaltenango, dry, open, rocky places, summit of Volcán de Zunil, alt. 3,800 meters, January, 1940, *Steyermark* 34843. The plants are in fruit. The vernacular name is recorded as Jazmín, a not very appropriate term, and perhaps used only for this occasion.

GESNERIACEAE

Alloplectus calochlamys Donn. Smith, Bot. Gaz. 27: 437. 1899.—The plant was reported by its describer from Sacoyojú and Pansamalá, Alta Verapaz, Guatemala, and appears to be known only from that department. Several recent collections have been made: Guatemala (Dept. Alta Verapaz): Finca Volcán, alt. 810 meters, in virgin forest, February, 1939, *C. L. Wilson* 253. Saquijá, 43 km. northeast of Cobán, alt. 1,200 meters, on rocks in damp, limestone thickets, *Standley* 70161; a shrub of 30–60 cm.; calyx pale red. Finca Socuyó, northeast of Carchá, alt. 1,350 meters, on open limestone, *Standley* 70288.

Klugia azurea Schlecht. Linnaea 8: 248. 1833.—A handsome plant because of its showy, violet-blue flowers, this herb has been reported previously only from Mexico and Costa Rica. It was collected in 1940 in western Guatemala: Dept. Suchitepéquez, along quebrada southeast of Río Samalá, southwestern lower slopes of Volcán de Zunil, vicinity of Finca Montecristo, alt. 1,200–1,300 meters, *Steyermark* 35218. Dept. San Marcos, barrancos 6 miles south and west of town of Tajumulco, northwestern slopes of Volcán de Tajumulco, alt. 2,300–2,800 meters, along moist banks of Quebrada Tohuotch, *Steyermark* 36602; corolla dark blue.

Solenophora Pirana Morton, Phytologia 1: 149. 1935.—The type was collected near Chichavac, Dept. Chimaltenango, Guatemala, and an additional collection was listed from Santa Elena, above Tecpám, in the same department. Two recent collections from western Guatemala have been determined by Mr. Morton as of this species, and two Mexican ones appear to be conspecific: Guatemala: Dept. Quezaltenango, Fuentes Georginas, western slope of Volcán de Zunil, alt. 2,850 meters, *Standley* 67352, 67491; an herb or shrub 1.5–3 meters high, usually simple; corolla yellow; common in wet forest, and showy. Dept. San Marcos, along stream in shade, Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, alt. 2,200–2,500 meters, *Steyermark* 36066; shrubby herb 3 meters tall. Dept. San Marcos, between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, *Steyermark* 36992; an herb 2.5–3 meters tall; corolla rich, deep yellow, spotted with maroon. Dept. San Marcos, upper forested slopes of Volcán de Tajumulco, between Las Canojas and top of ridge, 7 miles from San Sebastián, alt. 3,300–3,900 meters, *Steyermark* 35819.—Mexico: Chiquihuite, Volcán de Tacaná, Chiapas, alt. 2,800 meters, *Matuda* S-227, 2832.

Solenophora Purpusii Brandeg. Univ. Calif. Publ. Bot. 6: 65. 1914. *Episcia Purpusii* Brandeg. op. cit. 194. 1915.—The type was collected on Cerro del Boquerón, Chiapas. The plant has been re-collected in that state, and has been found to extend to Guatemala: Mexico: Volcán de Tacaná, Chiapas, alt. 1,000–2,000 meters, *Matuda* 2454.—Guatemala: Dept. San Marcos, slopes of barrancos tributary to and bordering Río Vega, between San Rafael at northeast portion of Volcán de Tacaná and Guatemala-Mexico boundary, alt. 2,500–3,000 meters, in moist ravine, *Steyermark* 36371; an herb 2.5 meters tall; corolla deep yellow; calyx green; leaves thin, membranaceous, dark green above, paler green beneath; petioles reddish; stems olive-green.

ACANTHACEAE

Neohallia Borrerae Hemsl. Biol. Centr. Amer. Bot. 2: 519. 1882.—The type of the single species of the genus was collected in the state of Chiapas, Mexico, and the plant has been detected in Veracruz. Recently it has been found also in the Occidente of Guatemala: Dept. San Marcos, above Finca El Porvenir, on Todos Santos Chiquitos, lower south-facing slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, in thickets, *Steyermark* 37219; called Palma de monte; a shrub; leaves dull, dark green above, paler green beneath; calyx in anthesis purple-violet; corolla vermilion-coral, 2-lipped. The hard and almost ligneous capsule is about 4.5 cm. long, the seed-bearing portion being about 1 cm. thick, and much shorter than the thick stipe.

RUBIACEAE

Bouvardia dictyoneura Standl. N. Amer. Fl. 32: 109. 1921.—When published, a single collection was known, *E. W. Nelson* 3757 from Chicharras, Chiapas, Mexico. Several collections have been made during the past few years in Guatemala: Dept. Suchitepéquez, in forest, south slope of Volcán de Atitlán, alt. 2,070–2,370 meters, October, 1934, *Skutch* 1509; a slender shrub 2 meters high, the flowers red. Dept. Suchitepéquez, on forested ridge, Finca Moca, alt. 1,230 meters, January, 1935, *Skutch* 2111; a slender shrub 1.5 meters high; flowers red. Dept. San Marcos, above Finca El Porvenir, between Todos Santos Chiquitos and Loma de la Paloma, south-facing slopes of Volcán de Tajumulco, alt. 1,400–1,700 meters, March, 1940, *Steyermark* 37292; leaves membranaceous, dull green above and strongly sulcate along the nerves, paler green beneath; corolla coral orange-red. Dept. San Marcos, between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, upper part of forested barranco, *Steyermark* 36425; calyx purple; a shrub 60 cm. high. Dept. San Marcos, Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, *Steyermark* 36276; flowers vermilion-coral. Dept. Quezaltenango, western slopes of Volcán de Zunil, opposite Santa María de Jesús, alt. 1,500 meters, *Steyermark* 35083; a shrub a meter high; corolla vermilion or deep orange.

Chiococca semipilosa Standl. & Steyerm., sp. nov.—Frutex subscandens ramosus, ramis gracilibus teretibus, vetustioribus fusco-brunneis, junioribus viridibus glabris, internodiis elongatis; stipulae persistentes minute pilosulae basi breviter connatae, parte lata basali triangulari 1 mm. longa subito in cuspidem linearem 2 mm. longum contracta; folia modica breviter petiolata firme membranacea, petiolo 2–3 mm. longo pilosulo; lamina lanceolata vel ovato-lanceolata vulgo 5–8 cm. longa et 1.5–3 cm. lata longiacuminata vel longe attenuato-acuminata, basi acuta vel breviter contracto-acuta, supra in sicco cinereo-viridis sparse minuteque patulo-pilosula, costa tenera prominente, subtus paullo pallidior dense breviterque hirtella, costa tenera prominente, nervis lateralibus utroque latere ca. 3 tenerrimis vix prominulis valde obliquis, venis obsoletis; racemi axillares singuli plerumque 5–7-flori foliis duplo breviores graciliter usque 2 cm. longe pedunculati, pedunculo ut rhachi pedicellisque hirtello, pedicellis gracilibus vulgo 3–7 mm. longis, bracteis lanceolatis vel subulatis parvis; calyx 1 mm. altus profunde dentatus, dentibus triangularibus erectis acutis; fructus ovali-orbicularis aliquanto compressus 4–5 mm. longus et fere aequilatus sparse hirtellus.—Guatemala: Dept. Chiquimula, Caracol Mountain, 1.5 miles north of Quezaltepeque, alt. 1,200–1,400 meters, November 7, 1939, *Julian A. Steyermark* 31406 (type in Herb. Field Mus.). Dry, wooded slopes, between Chiquimula and La Laguna, alt. 500–1,000 meters, *Steyermark* 30681.

A liana; leaves thin, dark green above, pale green beneath; fruit light green. The other Central American species of *Chiococca* differ in having quite glabrous foliage. The Guatemalan plant is related to the Mexican *C. pubescens* Standl., which has much broader leaves, obtuse or rounded at the base, and short-pilose branches.

Chiococca Steyermarkii Standl., sp. nov.—Frutex 2-3-metralis ut videtur dense subfastigiato-ramosus, ramis gracilibus sed rectis et subrigidis teretibus ochraceis rimulosis dense foliatis, internodiis foliis multo brevioribus dense minute puberulis; stipulae persistentes erectae e basi lata subulatae; folia parva brevissime petiolata crasse membranacea vel in sicco subcoriacea, petiolo crassiusculo vix ad 1.5 mm. longo; lamina lanceolato-linearis 15–23 mm. longa 2–4 mm. lata apicem obtusum versus sensim angustata, basin acutam versus breviter angustata, glabra, supra in sicco viridis, costa prominula, subtus paullo pallidior, costa tenera prominente, nervis venisque obsoletis; flores ut videtur axillares et solitarii, pedicellis recurvis fere filiformibus plerumque 5–8 mm. longis minute puberulis; hypanthium late ovoideum 2 mm. longum glabrum; calycis dentes ca. 1 mm. longi remoti subulati; corolla alba 10–11 mm. longa glabra, tubo e basi ad faucem sensim dilatato, fauce 4 mm. lato, lobis 4 late deltoideo-ovatis acutiusculis; antherae inclusae, filamentis filiformibus glabris; fructus albus subcompressus suborbicularis glaber 7 mm. longus et aequilatus.—Guatemala: Dept. San Marcos, Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, February 20, 1940, *Julian A. Steyermark* 36237 (type in Herb. Field Mus.).

In the whole genus *Chiococca* there probably is no other species so well defined as this one. The small, very narrow leaves and solitary flowers are altogether distinctive, and not matched in any other representative of the group.

Coutarea Lumaeana Baill. Adansonia 12: 301. 1879. *Hintonia Lumaeana* Bullock in Hook. Icon. *pl. 3295*, p. 5. 1935.—In the Herbarium of Field Museum is a photograph of the type of this rare species (Neg. No. 37197), from the Paris herbarium. The specimen, according to the label, was sent to Baillon by George Luma, from Guatemala, where it was cultivated at San Jorge, Dept. Chimaltenango, at an elevation of 900 meters. The plant has been collected but few times. Bullock (loc. cit.) reports *Donnell Smith* 2757 from Dept. Guatemala. One Mexican specimen has been examined, possibly but not necessarily taken from a cultivated plant: Environs d'Orizaba, *Botteri & Sumichrast* 172. There is now available a new collection, from a wild tree, that indicates at least one locality at which the species is truly indigenous: Guatemala: Dept. Quezaltenango, edge of barranco along Río Quenené, road between Finca Pireneos and Calahuaché, alt. 1,200–1,300 meters, January 27, 1940, *Steyermark* 35017; a tree of 7.5 meters; leaves membranaceous, dull green above, paler beneath; flowers sweet-scented, the corolla greenish white outside, bright white inside; anthers pale yellow. The tree is a handsome and showy one because of its very large and beautifully colored flowers.

Deppea amaranthina Standl. & Steyerm., sp. nov.—Frutex ramosus, ramis subangulatis gracilibus ochraceis, internodiis brevibus, novellis dense hirtello-villosulis; stipulae parvae deciduae; folia majuscula petiolata membranacea, petiolo gracili 1–3.5 cm. longo saepe rubescente dense hirtello-villosulo; lamina rotundo-ovata vel late rhombeo-ovata, interdum fere orbicularis, 7–11.5 cm. longa 4–8.5 cm. lata, apice rotundata vel obtusa, basi rotundata usque late cuneata, subito contracta atque cuneato-decurrens, supra viridis sparse brevissimeque villosula, costa nervisque non elevatis, subtus pallidior, densiuscule villosula, costa tenera prominente, nervis lateralibus utroque latere ca. 7 teneris angulo lato adscendentibus arcuatis prope marginem arcuato-conjunctis rubescentibus, venis prominulis laxe reticulatis; flores cymoso-paniculati, paniculis laxe paucifloris usque 4 cm. longis plerumque petiolis brevioribus, ramis gracilibus sparse puberulis, pedicellis gracilibus plerumque 3–6 mm. longis; sepala ad apicem capsulae persistentia lineari-subulata 2 mm. longa reflexa; capsula ovalis ca. 5 mm. longa et 3 mm. lata basi obtusa leviter bisulcata sparse puberula vel fere glabra obscure nervoso-costata; semina minuta brunnea.—Guatemala: Rocky, wooded slopes along river, Dept. Chiquimula, Cerro Brujo, in vicinity of Río Negro, below Montaña Montenegro, near village of Brujo, alt. 1,500–2,000 meters, November 1, 1939, *Julian A. Steyermark* 30926 (type in Herb. Field Mus.).

Local name, Conte. The Guatemalan species is allied with *Deppea pubescens* Hemsl., of southern Mexico. That has much more abundant pubescence, smaller and narrower, mostly acute leaves, much longer inflorescences, and deltoid sepals. The leaves of the present plant suggest those of some species of *Amaranthus*, by their shape and coloring, hence the specific name.

Exostema mexicanum Gray, Proc. Amer. Acad. 5: 180. 1861. —Described originally from Veracruz, this species has been collected also in San Luis Potosí, Campeche, Yucatán, Chiapas, and British

Honduras. It is now found to extend into Guatemala, and one collection from Salvador, previously referred with doubt to *E. indutum* Standl., probably is conspecific. The following collections are worthy of citation: Guatemala: Dept. Izabal, Río Dulce, between Livingston and 6 miles up river, on north side (right-hand side going up river), at sea level, *Steyermark* 39429; a tree; leaves firmly membranaceous, dull, rich green above, pale grass-green beneath.—Salvador: San Marcos Lempa, *Calderón* 2160; a tree, the local name Quina.—Mexico: Without locality, *Sessé & Mociño* 1603, 5476. The second Sessé and Mociño collection was labeled as a new species of *Psychotria*.

Faramea brachysiphon Standl. Field Mus. Bot. 8: 62. 1930.—The type is *Schipp* 345 from Middlesex, British Honduras. Three new collections are at hand, one from Guatemala. British Honduras: Middlesex, Stann Creek District, in high ridge on hilltop, *Percy H. Gentle* 2914; a treelet; flowers light blue.—Guatemala: Dept. Izabal, between Virginia and Lago de Izabal, Montaña del Mico, alt. 50–500 meters, April, 1940, *Steyermark* 38877, 38843; a shrub or small tree; leaves chartaceous, dull green on both sides, concolorous except for the pale green midrib beneath; calyx purplish blue; corolla bluish lilac; anthers yellow-buff; fruit globose, dull green.

Genipa vulcanicola Standl. Bot. Ser. Field Mus. 17: 213. 1937.—The type was collected by Skutch on the Volcán de Atitlán, Guatemala, in 1934. Recent collections indicate that the tree has a rather wide range: Guatemala: Dept. Quezaltenango, slopes of Volcán de Zunil, near Aguas Amargas, alt. 2,430–2,850 meters, moist forest, *Standley* 65405. Dept. Quezaltenango, damp, dense forest, Los Positos, southwest of San Martín Chile Verde, alt. 1,500 meters, *Standley* 67918; a tree of 4.5–7.5 meters, common. Dept. Quezaltenango, near Santa María de Jesús, alt. 1,400 meters, *Steyermark* 34411; a tree of 9 meters; leaves subcoriaceous, rich, dark green above, grass-green beneath.—Mexico: Without locality, December, 1936, *Matuda* 433. Siltepec, *Matuda* 1633. Mt. Ovando, Chiapas, *Matuda* 2081. Mt. Pasitar, Chiapas, *Matuda* S-218. The fruit of the tree has not yet been collected.

Geophila trichogyne (Muell. Arg.) Standl. Field Mus. Bot. 7: 423. 1931. *Mapouria trichogyne* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 426. 1881.—Several South American plants extend into northern Central America but are not found in intervening regions of Central America where they might well be expected. Of this group the present species is an example. It occurs in the Amazon Valley of Brazil and eastern Peru, as well as in Venezuela. Already it has been recorded from British Honduras, and two recent collections have been made in northern Guatemala: Dept. Izabal: Near Entre Ríos, alt. 18 meters, wet forest, *Standley* 72766; a creeping herb, the corolla white. Between Virginia and Lago de Izabal, Montaña del Mico, alt. 50–500 meters, *Steyermark* 38855; creeping on forest floor, forming colonies; leaves soft and membranaceous, dull green above, pale gray-green beneath.

Gonzalagunia chiapasensis (Standl.) Standl. & Steyerm., comb. nov. *Rondeletia chiapasensis* Standl. Bot. Ser. Field Mus. 22: 54. 1940.—The type is *Matuda* 1064 from Cascarada, Chiapas, represented in the Herbarium of Field Museum only by a fragment. No fruits were available when the description was drawn up, and when in flower some species of *Rondeletia* with elongate, spiciform panicles are confusingly like the common species of *Gonzalagunia*. Recent additional collections of the same plant show that it is a *Gonzalagunia*, and a quite distinct species in that genus. Besides the type, the following Guatemalan collections are at hand: Dept. Quezaltenango: In second-growth thickets, Volcán de Zunil, alt. 1,620 meters, *Skutch* 922; a shrub 4.5 meters high; flowers white, the outside of the corolla tube strongly tinged with rose; berries white.—Dept. San Marcos: Along Quebrada Tierra María, between Tajumulco and Tecutla, Volcán de Tajumulco, alt. 1,800–2,500 meters, *Steyermark* 36851; a shrub or tree as much as 6 meters tall; leaves dull green above, light grayish yellow-green beneath; fruit green, turning white, soft, spherical; corolla tube rose, the lobes white. Between Canjulá and La Unión Juárez, Volcán de Tacaná, alt. 2,000–3,000 meters, *Steyermark* 36475. The Skutch collection, the first one made of the species, was assigned a name as a new species of *Gonzalagunia* by the senior author, but unfortunately was not published before the description based on the Matuda collection.

Hoffmannia chiapensis Standl. Contr. U. S. Nat. Herb. 20: 206. 1919.—The type was collected on Cerro del Boquerón, Chiapas, Mexico, and the species has been reported also from Oaxaca (see N. Amer. Fl. 32: 207. 1934). Numerous additional collections have been made recently, and the plant extends into Guatemala: Mexico: Volcán de Tacaná, Chiapas, alt. 1,000–2,000 meters, *Matuda* 2450. Chiquihuite, Volcán de Tacaná, alt. 2,800 meters, *Matuda* 2828.—Guatemala: Dept. San Marcos: Between Canjulá and La Unión Juárez, Volcán de Tacaná, alt. 2,000–3,000 meters, *Steyermark* 36399; a shrub of 3 meters; leaves membranaceous, dark green above, paler beneath; stems olive-green; fruit purple-black. Between Todos

Santos and Finca El Porvenir, Volcán de Tajumulco, alt. 1,300–3,000 meters, *Steyermark* 36991, 37032; a shrub or tree of 2.5–6 meters; corolla greenish; fruit purplish red or dull rose-red. Finca Vergel, near Rodeo, alt. 900 meters, wet forest, *Standley* 68902, 68970, 68911. —Dept. Quezaltenango: Fuentes Georginas, western slope of Volcán de Zunil, alt. 2,850 meters, wet forest, *Standley* 67495, 67487, 67510, 67351; a shrub of 1.5–4.5 meters, the corolla pale greenish yellow. Damp forest, Chiquihuite, alt. 1,410 meters, *Standley* 68115; a shrub of 1.5 meters, the stems simple.

Hoffmannia confertiflora Standl. Contr. U. S. Nat. Herb. 20: 206. 1919.—A new Guatemalan collection has been made of this species, known previously only from the type, collected at San Miguel Uspantán, Dept. Quiché, at 2,100 meters: Dept. San Marcos, between La Vega ridge along Río Vega and northeast slopes of Volcán de Tacaná, to 3 miles from Guatemala-Mexico boundary, vicinity of San Rafael, alt. 2,500–3,000 meters, *Steyermark* 36189; a shrub of 3 meters; flowers white; leaves membranaceous, dark green above, dull green beneath, the lateral nerves conspicuous; fruit ovoid, dull reddish.

Hoffmannia gesnerioides (Oerst.) Kuntze, Rev. Gen. 285. 1891. *Ophryococcus gesnerioides* Oerst. Vid. Medd. 1852: 53. 1852. —When the account of the genus *Hoffmannia* was published in *North American Flora* (32: 203. 1934), the species was known only from the original collection, from Monte Pantasmo, Segovia, Nicaragua, obtained by Oersted in January, 1848. A duplicate of the type is in the Herbarium of Field Museum, where there is also a photograph (Neg. 22814) of the Copenhagen specimen. Two recent collections agree with the type, and show that the species has a rather wide range, especially for this genus: Honduras: Dept. Comayagua, forest floor near El Rincón, about 10 miles west of Siguatepeque, alt. 1,400–1,500 meters, *Yuncker, Dawson & Youse* 6058; a sprawling shrub; fruit scarlet, few-seeded.—Guatemala: Dept. Chiquimula, Cerro Tixixí, 3–5 miles north of Jocotán, alt. 500–1,500 meters, shaded slopes of ravine in cloud forest near the top, *Steyermark* 31611; suffrutescent; fruit globose, dull purplish rose; leaves firmly membranaceous, dark green above, pale beneath.

Hoffmannia macrosiphon Standl. Bot. Ser. Field Mus. 17: 276. 1937.—The original material was collected in Guatemala on Volcán de Zunil, Dept. Quezaltenango, the exact locality not indicated, *Skutch* 937. Recent exploration in the same country has yielded a number of new collections: Dept. San Marcos: Barranco

Eminencia, above San Rafael Pie de la Cuesta, alt. 2,100–2,400 meters, *Standley* 68666, 68683; growing in wet forest; a shrub of 1.5 meters; corolla pale red. Trail between Finca El Porvenir and San Sebastián, halfway up slopes in moist forest, alt. 1,300–4,000 meters, *Steyermark* 37059; a woody vine; fruit cylindric, pale green; leaves dark green above, pale green beneath; corolla tube and lobes dull yellow, the margins of the lobes reddish; anthers whitish. Between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, *Steyermark* 36982, 36966; a shrub of 2.5–4.5 meters; fruit oblong or sometimes becoming spherical, pale green, turning deep red.

Mitchella repens L. Sp. Pl. 111. 1753.—One of the least expected plants discovered recently in Guatemala is the partridge berry. Although this plant ranges widely in temperate North America, there is, so far as the writers know, only one authentic record for it in Mexico, a specimen collected by Ehrenberg (No. 1191) in December, 1839, at Cuesta de Pinoles. Data for the Guatemalan collection are as follows: Dept. Zacapa, pine forest, Sierra de las Minas, near summit of ridge, below Finca Alejandria, alt. 2,000 meters, October, 1939, *Steyermark* 29769. Careful comparison with United States material shows no definite differences, except that the leaves are somewhat larger than those of most northern specimens, and inclined to be pointed. No corollas were found with the Guatemalan plants, and these might supply some distinguishing character.

Pentagonia Donnell-Smithii Standl. Journ. Wash. Acad. Sci. 17: 170. 1927. *Watsonamra Donnell-Smithii* Standl. Contr. U. S. Nat. Herb. 17: 442. 1914.—In *North American Flora* (32: 142. 1921) this shrub or tree was reported only from the original locality, near La Emilia, Llanuras de Santa Clara, Costa Rica. It has, however, been reported more recently from much farther north in Central America, and is common along the Atlantic coast of Honduras. Thus far a single record is known for Guatemala: Dept. Izabal, Río Juyamá, southeast of Cheyenne, about 15 miles southwest of Bananera, alt. 50–100 meters, *Steyermark* 39156; a tree of 9 meters; leaves coriaceous, dark green above, pale green beneath; flower buds pale green. Probably this species can not be maintained as distinct from *P. macrophylla* Benth. of Panama.

Psychotria Purpusii Standl. Contr. U. S. Nat. Herb. 23: 1388. 1926.—Previously only the type has been known, *Purpus* 7012 from Cerro del Boquerón, Chiapas, Mexico. The species is a somewhat isolated one, with inflorescences that are unusually handsome for this genus. It is now known to extend into the Occidente of Guatemala: Dept. San Marcos: Between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, *Steyermark* 36980; a shrub of 2.5–3.5 meters; corolla white, thickish; stigma white; anthers purplish; bracts orange and green. Between town of Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, alt. 1,800–2,500 meters, high forest near top of barranco, *Steyermark* 36809; a tree of 6 meters; leaves soft, membranaceous, dark green above, pale green beneath; bracts yellow, with green veins; fruit white, with mustard-yellow hairs near the tip; peduncle mustard-yellow, nodding.

Rondeletia Deamii (Donn. Smith) Standl. N. Amer. Fl. 32: 60. 1918. *Bouvardia Deamii* Donn. Smith, Bot. Gaz. 49: 455. 1910.—In *North American Flora* (loc. cit.) this shrub is reported only from Oaxaca and Guatemala, but it has since been collected in Salvador, and reported from that country. The type is from Fiscal, Dept. Guatemala, Guatemala, and several recent collections have been made there and elsewhere in that country: Dept. Guatemala: Concuá Bridge over Río Motagua, alt. 300 meters, in thicket by the river, *Standley* 59322, 59317; a slender shrub or a small tree. Near Fiscal, alt. 1,100 meters, dry, rocky thicket, *Standley* 59592; a shrub 1.5 meters high.—Dept. Chiquimula: Along stream in cañada, Caracol Mountain, 1.5 miles north of Quezaltepeque, alt. 1,200–1,400 meters, *Steyermark* 31400; a shrub of 1.5 meters, the leaves membranaceous.

Rondeletia izabalensis Standl. & Steyerm., sp. nov.—Arbor 4.5–6 m. alta, ramis gracilibus fusco-ochraceis vel brunnescentibus teretibus sparse strigosis, internodiis brevibus vel elongatis; stipulae foliaceae subreniformes ca. 1 cm. longae et paullo latiores apice late rotundatae basi profunde cordatae glabratae; folia majuscula breviter petiolata firme membranacea, petiolo crasso 6–15 mm. longo strigilloso; lamina variabilis, oblanceolato-oblonga usque oblongo-obovata vel elliptico-lanceolata, plus minusve asymmetrica, 11–23 cm. longa 5–9.5 cm. lata acuta ad subabrupte longiacuminata, basi cuneata vel longe angusteque attenuata, basi ipsa interdum subobtusa, supra in sicco fuscescens vel brunnescens glabra, costa nervisque manifestis sed non elevatis, subtus paullo pallidior pilis minutis adpressis sat dense conspersa, costa tenera prominente, nervis lateralibus utroque latere ca. 9 obliquis teneris angulo semirecto vel angustiore adscendentibus leviter arcuatis prope marginem arcuato-junctis, venis fere obsoletis; inflorescentia terminalis 7–9 cm. longe pedunculata erecta cymoso-corymbosa ca. 5 cm. longa et 7 cm.

lata dense multiflora, bracteis basalibus foliaceis, superioribus lineari-attenuatis 3–10 mm. longis, ramis gracilibus dense sericeo-strigillosis, floribus dense aggregatis sessilibus; hypanthium subglobosum 1 mm. longum dense pilis ochraceis longiusculis adpresso-pilosum; calyx vix ultra 1 mm. longus adpresso-pilosus 4-lobus, lobis ovatis obtusis vel acutis inaequalibus; corolla alba extus dense subadpresso-pilosa, tubo gracili 5–6 mm. longo sursum vix dilatato, fauce non barbato, lobis 4 patentibus subrotundatis 1.5–2 mm. longis intus glabris.—Guatemala: Wet forest, Escoba, across the bay from Puerto Barrios, Dept. Izabal, near sea level, May 3, 1939, *Paul C. Standley* 72891 (type in Herb. Field Mus.), 72976. Chichoob, Chamá, Dept. Alta Verapaz, alt. 300 meters, June 8, 1920, *Harry Johnson* 197. Dept. Izabal, between Escobas and Montaña Escobas, across the bay from Puerto Barrios, alt. 1–100 meters, along stream, *Steyermark* 39303, 39304; leaves firmly chartaceous, rich green above, paler green beneath.

Some of these collections were determined as *Rondeletia linguiformis* Hemsl., but the material here cited under that species has shown that the determinations were erroneous. The present plant differs from *R. linguiformis* in its broad, cordate stipules, smaller corollas, and pubescent lower leaf surface. Also, in that species the calyx lobes are broadest at the apex, rather than at the base.

Rondeletia Jurgensenii Hemsl. Diag. Pl. Mex. 2: 29. 1879; Bullock in Hook. Icon. *pl. 3322*. 1936. *Deppea macrocarpa* Standl. Field Mus. Bot. 4: 268. 1929. *D. stenosepala* Standl. Field Mus. Bot. 8: 161. 1930.—Determination of a recent Guatemalan collection has made it evident that the three names listed above refer to a single species. The following material of *Rondeletia Jurgensenii* may be reported, in addition to type material collected in Mexico by Jurgensen, and certain Hinton specimens cited by Bullock (loc. cit.). Mexico: Nayarit: Cerro de San Juan, west of Tepic, alt. 1,000 meters, *Mexia* 727 (type of *Deppea macrocarpa*); a shrub of 60–120 cm., called Pie de pájaro.—Oaxaca: Tlajiaco a Chicahuaitla, *Galeotti* 2685 (type of *Deppea stenosepala*).—Guatemala: Dept. Quezaltenango, oak woods, Volcán de Santa María, between Santa María de Jesús and Las Mojadas, alt. 1,500–3,000 meters, *Steyermark* 33961; a shrub of 4.5 meters; leaves membranaceous, dull green. The species is new for the Guatemalan flora.

Rondeletia linguiformis Hemsl. Diag. Pl. Nov. 29. 1879.—The species is a rare one, known only from Guatemala. The following collections agree exactly with the original collection,

obtained by Skinner, quite possibly in the same region: Guatemala: Dept. Izabal, between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, April, 1940, *Steyermark* 38546, 38551. A shrub 3–4.5 meters tall, common on forested slopes beneath pines; corolla white; leaves firmly subcoriaceous, rich green above, paler, dull green beneath; flowers sweet-scented.

Rondeletia myriantha Standl. & Steyerm., sp. nov.—Frutex vel arbuscula 3.5 m. alta vel ultra, ramis gracillimis teretibus ferrugineis glabratis rimosis sparse lenticellatis, novellis puberulis vel interdum primo tomentosis, internodiis brevibus vel elongatis; stipulae persistentes anguste lanceolato-triangulares attenuatae strigosae; folia modica breviter petiolata membranacea, petiolo gracili 7–15 mm. longo adpresso-pilosulo; lamina lanceolato-oblonga 6.5–15.5 cm. longa 3.5–5 cm. lata longe angusteque attenuato-acuminata, basi acuta vel obtusa, supra viridis, glabra vel tantum ad nervos pilosula, nervis venisque prominulis, subtus paullo pallidior primo laxe sparseque arachnoideo-tomentulosa, cito glabrata, in statu adulto fere omnino glabra, costa tenera prominente, nervis lateralibus utroque latere ca. 7 teneris obliquis angulo semirecto vel latiore adscendentibus arcuatis, venis fere omnibus transversis remotis parallelis prominulis; inflorescentia terminalis erecta anguste elongato-thyrsoidea et fere spiciformis 1–3.5 cm. longe pedunculata ca. 8 cm. longa atque 2.5 cm. lata laxe multiflora, floribus sessilibus vel brevissime pedicellatis in cymulas parvas dense paucifloras breviter pedunculatas aggregatis; bracteae infimae interdum foliosae sed parvae, superioribus linearibus viridibus brevibus inconspicuis; hypanthium fere 1 mm. longum subglobosum dense albo-tomentosum; calyx 4-dentatus, dentibus vix ad 1 mm. longis inaequalibus viridescentibus extus glabratis ovalibus et obtusissimis usque triangularibus et acutis; corolla alba parva extus subsparse adpresso-pilosula, tubo gracili 5 mm. longo tereti sursum vix dilatato, lobis 4 orbicularibus 1.5 mm. longis, intus glabris, fauce non barbato; stamina inclusa, stylo breviter exserto; capsula subglobosa costata glabrata 2.5–3 mm. longa.—Guatemala: Dept. Suchitepéquez, bushy slopes and banks, Finca Moca, alt. 960 meters, October 31, 1934, *Alexander F. Skutch* 1569 (type in Herb. Field Mus.; dupl. in Herb. Arnold Arboretum). Dept. Quezaltenango, damp forest, Finca Azucena, above Colomba, alt. 1,320 meters, March, 1939, *Standley* 68087. Dept. Suchitepéquez, southwestern lower slopes of Volcan de Zunil, between Finca Montecristo and Finca Asturias, alt. 1,200–1,300 meters, *Steyermark* 35286; a shrub or small tree of 4.5–6 meters. Dept. San

Marcos, above Finca El Porvenir, on Todos Santos Chiquitos, lower slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, *Steyermark* 37096; a tree of 7.5–9 meters.

A relative of *R. secundiflora* Robinson, also Guatemalan, which differs in its smaller stipules, appressed-pilosulous leaves, hirsute hypanthium, longer calyx lobes, and somewhat larger corolla.

Rondeletia rufescens Robinson, Proc. Amer. Acad. 45: 402. 1910.—The type is from Cobán, Alta Verapaz, Guatemala, and heretofore the species has been unknown outside that department. It has been re-collected there recently, and found also in the rather distant Department of Chiquimula. Guatemala: Near Tactic, Alta Verapaz, alt. 1,500 meters, wet forest, *Standley* 70501; a shrub of 2.5 meters; corolla pale pink. Near San José, southeast of Tactic, Alta Verapaz, alt. 1,500 meters, wet thicket, *Standley* 69652; a shrub of 3 meters; corolla reddish pink. Dept. Chiquimula, middle slopes of Montaña Norte to El Jutal, on Cerro Brujo, southeast of Concepción de las Minas, alt. 1,700–2,000 meters, in mixed forest below the cloud forest, *Steyermark* 31069; a shrub of 3 meters; leaves soft, dark, dull green above, gray-green beneath; inflorescence (immature) purplish red. The shrub is a pretty one because of the abundance of beautifully colored, raceme-like panicles.

Rondeletia septicidalis Robinson, Proc. Amer. Acad. 45: 403. 1910.—When the account of the genus *Rondeletia* was published in *North American Flora* (32: 55. 1918) a single collection was known, from Chicharras, Chiapas, Mexico. Two additional collections are now at hand: Mexico: Volcán de Tacaná, Chiapas, north slope, alt. 2,100 meters, April, 1939, *Matuda* 2965.—Guatemala: Dept. San Marcos, above Finca El Porvenir, between Todos Santos Chiquitos and Loma de la Paloma, south-facing slopes of Volcán de Tajumulco, alt. 1,400–1,700 meters, March, 1940, *Steyermark* 37254; a shrub or small tree of 4.5–6 meters; leaves membranaceous, dark green above, paler green beneath; inflorescence drooping. The very slender and interrupted inflorescences are as much as 32 cm. long.

Rondeletia Skutchii Standl. & Steyerm., sp. nov.—Frutex 4.5 m. altus, ramis gracilibus teretibus, vetustioribus fuscescentibus vel ochraceis, junioribus ferrugineis primo dense laxeque tomentosis, cito glabratis; stipulae persistentes e basi triangulari-lanceolata anguste subulato-attenuatae ca. 7 mm. longae tomentosae vel glabratae; folia modica breviter petiolata membranacea, petiolo gracili 1–1.5 cm. longo laxe tomentoso vel glabrato; lamina anguste lanceolato-oblonga usque rhombico-elliptica vel oblongo-elliptica 10–15.5 cm. longa 3–6.5 cm. lata longissime angusteque attenuato-acuminata vel interdum acuminata, basi interdum obliqua acuta, supra viridis, primo sparse laxeque tomentosa, cito glabra, subtus pallidior rufescenti-canescens subdense et laxissime tomentosa, costa tenera prominente, nervis lateralibus utroque latere ca. 11 tenerrimis arcuatis angulo semirecto vel saepius latiore adscendentibus, venis prominulis laxe reticulatis; inflorescentia reflexa et pendula anguste thyrsoidea et spiciformis sublaxe multiflora breviter pedunculata 7–14 cm. longa et ca. 3.5 cm. lata, rhachi dense tomentosa, floribus in cymulas dense paucifloras sessiles vel breviter pedunculatas congestis, bracteis omnibus inconspicuis linearibus; hypanthium subglobosum basi obtusum dense albo-tomentosum; calyx 4-lobus intus glaber extus sparse tomentosus, lobis anguste lanceolato-triangularibus longe attenuatis ca. 2 mm. longis; corolla extus floccoso-tomentosa, tubo gracili 10–12 mm. longo gracili superne vix dilatato, lobis 4 patentibus rotundatis 3.5–4 mm. longis apice rotundatis patentibus intus glabris, fauce glabro; stamina inclusa, stylo tubum corollae aequante. —Guatemala: Dept. Suchitepéquez, on forested ridge, Finca Moca, alt. 1,260 meters, January 10, 1935, *Alexander F. Skutch* 2110 (type in Herb. Field Mus.; duplicate in Herb. Arnold Arboretum).

The corollas are described as dull red. The plant belongs to the group *Laniflorae* (see N. Amer. Fl. 32: 46. 1918). Superficially it much resembles the recently described *Rondeletia tacanensis* Lundell, of Volcán de Tacaná, Chiapas, Mexico, particularly in its reflexed or pendent inflorescence. In that species the corolla is much larger, and the slender, conspicuous calyx lobes measure as much as 7 mm. in length.

Rondeletia stachyoidea Donn. Smith, Bot. Gaz. 43: 298. 1906. —In *North American Flora* (32: 58. 1918) the range of this species is given as Guatemala to Costa Rica, but this has been found erroneous. The material on which the Costa Rican record was based is *Rondeletia Brenesii* Standl. (Bot. Ser. Field Mus. 18: 1370. 1938). *R. stachyoidea* was described from Semicoch, Alta Verapaz, Guatemala. It occurs in Guatemala also in the Department of Izabal, and has been found along the Atlantic coast of Honduras and in British Honduras. Recently it has been collected in Mexico: Juárez, Tenosique, Tabasco, in advanced forest, June, 1939, *E. Matuda* 3392; a shrub of 3 meters.

Rondeletia suffrutescens Brandeg. Univ. Calif. Publ. Bot. 6: 70. 1914.—When the account of the genus *Rondeletia* was published in *North American Flora* (32: 49. 1918) only the original collection of this species was known, *Purpus* 6704 from Cerro del Boquerón, Chiapas, Mexico. Several additional collections have been made during the past few years: Mexico: Siltepec, Chiapas, *Matuda* 1675.—Guatemala: Dept. Quezaltenango, rich woodland, Volcán de Zunil, alt. 1,710 meters, *Skutch* 889; a shrub to 1.5 meters in height; flowers pale yellow. Dept. San Marcos, between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, March, 1940, *Steyermark* 37018; a woody vine; leaves thin, grass-green above, paler beneath. Dept. San Marcos, slopes of barrancos tributary to and bordering Río Vega, between San Rafael and Guatemala-Mexico border, alt. 2,500–3,000 meters, *Steyermark* 36342; in ravine thickets around boundary line; an herb of 60–90 cm.; corolla tube green outside, the lobes dull yellow, thickish, fleshy, spotted with purplish; flowers with the odor of sulphur dioxide. Dept. Quezaltenango, along Quebrada de San Gerónimo, Finca Pireneos, lower slopes of Volcán de Santa María, alt. 1,300–2,000 meters, in forest, *Steyermark* 33367; a vine, the leaves membranaceous, dull green. The last specimen is in fruit, the capsules being about 7 mm. long, glabrous, costate and nerved, bearing at the apex the long and narrow, green, reflexed calyx lobes.

Rondeletia tacanensis Lundell, Bull. Torrey Club 66: 603. 1939.—An apparently well marked species and a handsome plant, recently described from the western slopes of the Volcán de Tacaná, Chiapas, Mexico, at 2,800 meters. The species extends into adjacent Guatemala: Dept. San Marcos: Trail between Finca El Porvenir and San Sebastián, Volcán de Tajumulco, upper forest below the *Abies* zone, March, 1940, *Steyermark* 37066; a tree of 9–12 meters; panicles recurved; corolla tube dark red, the lobes spreading, very dark, rich, blood-red in bud; calyx pale green; leaves rugose, firmly membranaceous, dark green above, paler green beneath. Between La Vega ridge along Río Vega and northeast slopes of Volcán de Tacaná, vicinity of San Rafael, alt. 2,500–3,000 meters, *Steyermark* 36209; a tree of 7.5 meters; flowers dark, dull red.

Rondeletia vulcanicola Standl. & Steyerm., sp. nov.—Frutex vel arbuscula 1.5–6 m. alta, ramis gracillimis ochraceis vel brunnescentibus teretibus, novellis densissime albido-strigosis, internodiis brevibus vel elongatis; stipulae persistentes erectae e basi brevi triangulari subulatae ca. 2.5 mm. longae; folia inter minora petiolata tenuiter membranacea, petiolo gracili 5–12 mm. longo dense strigoso; lamina ovato-lanceolata usque anguste elliptico-

lanceolata prope medium vel paullo inferius latissima, apice anguste longiattenuata et saepe subfalcata, basin versus breviter angustata, basi ipsa acuta vel acuminata, supra in sicco fuscescenti-olivacea densiuscule adpresso-pilosa, subtus fere concolor, sparse vel subdense adpresso-pilosa, pilis tenerrimis pallidis, in omnibus axillis nervorum venarumque densius barbata, costa tenera prominente, nervis lateralibus utroque latere ca. 11 tenerrimis subarcuatis obliquis, venis paucis inconspicuisque; inflorescentia terminalis paniculata longipedunculata, angusta et fere spiciformis, usque 8 cm. longa sed saepius multo brevior, rhachi gracili viridi pilis adscendentibus dense pilosa, ramis lateralibus brevibus vel saepius nullis, floribus in glomerulos parvos cymoso-aggregatis, sessilibus vel brevissime pedicellatis; bracteae parvae inconspicuae; hypanthium 1 mm. longum dense pilis longiusculis pallidis hirtellum; calycis lobi 4 inaequales lineares vel lanceolati 1–2 mm. longi hispiduli; corolla in sicco fusco-purpurea extus dense pilis brevibus adpressis pallidis strigosa, tubo gracili vix ad 6 mm. longo, lobis suborbicularibus 1.5 mm. longis intus glabris, fauce non barbato; capsula didymo-globosa ca. 4 mm. lata et 3 mm. alta dense pilis brevibus subadpressis hispidula; semina numerosa pallide lutescentia obtuse angulata grosse punctata.—Guatemala: Dept. Quezaltenango: Finca Pireneos, lower, south-facing slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–1,500 meters, December 31, 1939, *Julian A. Steyermark* 33220 (type in Herb. Field Mus.); January 8, 1940, *Steyermark* 33801; leaves thin, grass-green above, pale green beneath, with prominent, light-colored nerves.—Dept. Sacatepéquez: Moist forest, near Las Lajas, alt. 1,200 meters, November, 1938, *Standley* 58105.—Dept. Escuintla: Wet forest, Río Guacalate, alt. 600 meters, December, 1938, *Standley* 60201. Escuintla (probably from the same locality as the preceding collection), *J. R. Johnston* 1362.

The shrub is closely—perhaps too closely—related to the Mexican *Rondeletia Liebmannii* Standl. In that the corollas are slightly larger, and the pubescence of the leaves is decidedly different in character, consisting of soft, spreading hairs rather than of closely appressed ones.

Rondeletia Zolleriana Standl. & Steyerm., sp. nov.—Frutex 1.5–2.5 m. altus ramosus, ramis gracillimis teretibus subferrugineis, internodiis elongatis sparse primo strigillosis, in statu adulto fere omnino glabris; stipulae persistentes 2.5–3 mm. longae e basi lata subulato-acuminatae strigillosae; folia parva petiolata membranacea, petiolo gracili 5–13 mm. longo strigilloso; lamina elliptica vel elliptico-ovata 5–10 cm. longa 2.5–5.5 cm. lata subito angusteque longiacuminata, basi acuta vel obtusa et saepius abrupte breviter contracta, supra viridis pilis paucis hinc inde conspersis villosa vel fere omnino glabra, costa nervisque prominulis inconspicuis, subtus paullo pallidior ad costam nervosque sparse subadpresso-hirtella, in axillis saepe barbata, costa tenera prominente, nervis lateralibus utroque latere 5–6 tenerrimis subarcuatis angulo lato adscendentibus, venis obscuris laxe reticulatis; inflorescentia terminalis, sessilis atque e basi triradiata et foliaceo-bracteata vel interdum usque 3.5 cm. longe pedunculata, cymoso-paniculata pauciflora, usque 5 cm. lata, laxa, floribus plerumque in cymulas trifloras dispositis, pedicellis usque 7 mm. longis sed saepe multo brevioribus dense strigosis, bracteis elongatis foliaceis linearibus vel lineari-lanceolatis; hypanthium ovale 2–2.5 mm. longum dense albido-strigosum; calyx 4-partitus, extus sparse strigosus, segmentis maxime inaequalibus, uno majore lanceolato 10 mm. longo 3 mm. lato acuminato 3-nervio, aliis 3 quoque inaequalibus fere linearibus vel subulatis plerumque 5–7 mm. longis; corolla ochroleuca extus dense albido-strigosa, tubo 5–7 mm. longo sursum valde sensimque dilatato apice ca. 3 mm. lato, fauce non barbato, lobis suborbicularibus fere 3 mm. longis apice late rotundatis intus glabris, extus basi hispidulis, superne sparse puberulis vel fere glabris.—Guatemala: Dept. San Marcos, common on slopes between Finca El Porvenir and Loma Corona, 9 miles northwest of El Porvenir, southwest-facing slopes of Volcán de Tajumulco, alt. 1,300–2,000 meters, March 14, 1940, *Julian A. Steyermark* 37738 (type in Herb. Field Mus.). Between Todos Santos and Finca El Porvenir, slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, March 1, 1940, *Steyermark* 37016; a vine or shrub up to 3 meters tall; flowers white; leaves thin, membranaceous, grass-green above, paler beneath.

Leaves thin, dull green above and shining, pale green beneath; flowers creamy yellow. The plant is related to *Rondeletia aethiocalymna* Donn. Sm., of Alta Verapaz, Guatemala, but in that the much larger leaves are glabrous, and the largest calyx lobe is obtuse or rounded at the apex.

The species is named for Mr. Erich Zoller, manager of Finca El Porvenir, who furnished the junior author with abundant facilities for his work on the Volcán de Tajumulco. He was greatly interested in the botanical exploration of this area, and his kindliness and thoughtfulness contributed largely to the success of the collecting upon this, the highest volcano of Guatemala, and of Central America.

Sommera chiapensis Brandeg. Univ. Calif. Publ. Bot. 6: 196. 1915.—Heretofore the species has been known only from the type, collected at Finca Irlanda, Chiapas, Mexico, by Purpus. It occurs also in western Guatemala: Dept. San Marcos: Above Finca El Porvenir on Todos Santos Chiquitos, lower south-facing slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, along stream, March, 1940, *Steyermark* 37205; a tree of 9–12 meters; leaves firmly membranaceous, dark forest-green above, paler dull green beneath; corolla white. Above Finca El Porvenir, up Loma Bandera Shac, lower south-facing slopes of Volcán de Tajumulco, along quebrada, alt. 1,300–1,500 meters, *Steyermark* 37441; a tree of 9 meters.

CAPRIFOLIACEAE

Viburnum jucundum Morton, Contr. U. S. Nat. Herb. 26: 355. 1933.—The type was collected somewhere in Chiapas, Mexico, *Ghiesbreght* 729. Several specimens from Guatemala, one determined by Mr. Morton, indicate an extension of range into the latter country: Dept. Quezaltenango: Mountains southeast of Palestina, damp, dense forest, alt. 2,700 meters, *Standley* 66339; a tree of 6 meters.—Dept. San Marcos: Upper, south-facing, forested slopes of Volcán de Tajumulco, between Las Canojas and top of ridge, 7 miles from San Sebastián, alt. 3,300–3,900 meters, *Steyermark* 35868; a tree of 9 meters; leaves soft, rich, light grass-green above, gray-green beneath; fruits green, turning dull blue-black. Along Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, alt. 2,200–2,500 meters, *Steyermark* 36034; a tree of 7.5–9 meters; fruit brownish.

Viburnum Mortonianum Standl. & Steyerm., sp. nov.—Frutex vel arbuscula, ramis crassiusculis densissime stellato-hirsutis, pilis fulvis sessilibus dense intertextis et patulis, internodiis elongatis; folia modica petiolata herbacea, petiolo crasso 12–16 mm. longo dense stellato-hirsuto; lamina oblonga usque lanceolato-oblonga vel ovato-oblonga 10–13 cm. longa 4.5–7.5 cm. lata acuta usque longiacuminata, basi obtusa usque late rotundata vel subtruncata, margine fere integro vel remote minuteque mucronato-denticulato, supra sat dense pilis longis rigidiusculis plerumque furcatis vel stellatis hirsuta, costa nervisque impressis, subtus paullo pallidior brunnescens, densissime pilis sessilibus rigidis stellato-hirsuta, costa tenera prominente, nervis lateralibus utroque latere 5–6 teneris prominulis arcuatis, venis paucis prominentibus laxe reticulatis; inflorescentia basi nuda 3–4 cm. longe pedunculata e basi pluriradiata, radiis subpatulis vel adscendentibus dense stellato-hirsutis, 4.5–8.5 cm. lata dense multiflora, floribus breviter pedicellatis, bracteis parvis linearibus viridescentibus extus hispidulis; ovarium dense hirsutum; sepala lineari-lanceolata ca. 1.3 mm. longa hirtella; corolla extus hirsuta, limbo 5–6 mm. lato intus glabro, lobis suborbicularibus minute ciliolatis; stylus glaber; stamina longiexserta, filamentis glabris ca. 2 mm. longis, antheris late ovalibus ca. 0.8 mm. longis. Guatemala: Dept. Chiquimula, Cerro Tixixí, 3–5 miles north of Jocotán, alt. 1,500 meters, ravine slope near top on north-facing side, November 10, 1939, *Julian A. Steyermark* 31606 (type in Herb. Field Mus.).

Leaves thick and soft, dark, dull green above, pale beneath, very rugose on both sides; flowers white; anthers pink-buff, the filaments white; hairs of the branches brown. The species is named for Mr. C. V. Morton, monographer of the species of *Viburnum* of Mexico and Central America. In his key (Contr. U. S. Nat. Herb. 26: 342. 1933) it appears to run to *V. jucundum* Morton, of Chiapas. That species, however, has relatively broader leaves, and the much denser pubescence consists of soft hairs less than half as large as those of *V. Mortonianum.*

COMPOSITAE

Achyrocline deflexa Rob. & Greenm. Amer. Journ. Sci. 50: 153. 1895. *A. Yunckeri* Blake, Field Mus. Bot. 17: 399. *pl. 16.* 1938.—The type of *A. deflexa* is *Pringle* 6054 from Sierra de San Felipe, Oaxaca, Mexico, at 2,100–2,400 meters; that of *A. Yunckeri* was collected at El Achote, Dept. Comayagua, Honduras, at 1,350 meters. The collections cited below represent a plant rather common in pine and oak forest in the mountains of central Guatemala. Comparison of them with the two species listed shows that they might be referred equally well to either, the differences mentioned as separating *A. Yunckeri* from *A. deflexa* being apparently of little importance, and not sufficiently stable. Guatemala: Dept. Quiché, forested barranco south of Chichicastenango, alt. 1,850 meters, *Standley* 62411. Dept. Chimaltenango, near Río Pixcayó, between Chimaltenango and San Martín Jilotepeque, alt. 1,650–1,800 meters, *Standley* 64495. Dept. Chimaltenango, Barranco de la Sierra, southeast of Patzúm, alt. 2,100 meters, *Standley* 61612. Dept. Guatemala, damp, wooded barranco 10 km. south of San Raimundo, alt. 1,800 meters, *Standley* 62903. The plant is a suffruticose herb about a meter high.

Adenocaulon lyratum Blake, Journ. Wash. Acad. Sci. 24: 435. *f. 1.* 1934.—The type of this, the only Central American representative of its genus, is *Skutch* 622 from open oak woods, Chichavac, Dept. Chimaltenango, Guatemala. Two further collections may be reported: Slopes of Volcán de Acatenango, above Las Calderas, Dept. Chimaltenango, alt. 1,800–2,400 meters, December, 1938, and January, 1939, in damp thickets or moist forest, *Standley* 61774, 60003. The plants were found in abundance in several localities, but were exceedingly local in distribution. All those seen at this time were past flower and fruit, but with leaves fairly well preserved.

Adenostemma hirtiflorum Benth. Pl. Hartw. 75. 1841.—The type was collected by Hartweg (No. 531) at "Rancho Santa Rita," near Quezaltenango, Guatemala. A photograph of a specimen of this collection, from the Vienna herbarium, is in the Herbarium of Field Museum (negative No. 33181). The species appears limited in distribution, being known at present only from the Department of Quezaltenango: Forest openings, Palmar, alt. 1,290 meters, *Skutch* 1449; stems decumbent and rooting at the base; flowers white. Finca Pireneos, lower south-facing slopes of Volcán de Santa María, along spring-fed rivulet, alt. 1,300–1,500 meters, *Steyermark* 33228; stems procumbent; flowers white.

Alepidocline annua Blake, Journ. Wash. Acad. Sci. 24: 441. *f. 2.* 1934.—The genus is monotypic, being based on *Skutch* 722, found as a weed in a cornfield at Chichavac, Dept. Chimaltenango, Guatemala, at 2,430 meters. Two recent collections represent the same species: Guatemala: Moist bank, slopes of Volcán de Agua, south of Santa María de Jesús, Dept. Sacatepéquez, alt. 1,800–2,100 meters, December 10, 1938, in fruit, *Standley* 59457. Damp, open forest, above Las Calderas, Dept. Chimaltenango, alt. 1,800–2,100 meters, Dec. 15, 1938, *Standley* 60061; erect and in flower, the rays pink.

Archibaccharis Blakeana Standl. & Steyerm., sp. nov.—Frutex vel suffrutex 1–2.5 m. altus, interdum aliquanto recurvus, subsimplex vel saepius ramosus, ramis crassiusculis, saepe subflexuosis, obtuse angulatis, fere omnino glabris, ramis junioribus aliquanto villosulis, internodiis plerumque elongatis; folia majuscula essentialiter sessilia herbacea, plerumque late ovata usque rotundato-ovata, vulgo 6–13 cm. longa et 4–8.5 cm. lata sed interdum majora et superiora minora atque interdum oblongo-ovata, acuminata vel longiacuminata, basin versus abrupte contracta, obtusa usque subtruncata, et subito in partem petioliformem angustata, parte inferiore petioliformi anguste vel late alata, basi late dilatata, auriculata et amplexicauli; lamina supra viridis tactu asperrima dense scabra,

subtus pallidior ad nervos, costam venasque sparse breviterque villosula vel fere glabra, venulis arcte reticulatis, margine undulato-dentato, dentibus brevibus remotis mucronatis; capitula viridescenti-alba parva in cymas parvas rotundatas disposita, cymis in paniculas magnas foliatas aggregatis, pedicellis capitulorum plerumque 3–6 mm. longis villosulis, bracteis parvis linearibus pallidis; involucrum 3.5–4.5 mm. altum et aequilatum; phyllaria ca. 3-seriata inaequalia pallida linearia acuta vel obtusa ciliata, dorso sparse adpresso-pilosula vel fere glabra; radii nulli; corolla glabra 3 mm. longa; achaenia immatura compressa 1.2–1.5 mm. longa sparse adpresso-pilosula, pappi setis sordidis ca. 2.5 mm. longis.—Guatemala: Dept. Sacatepéquez: Near Antigua, brushy slope, alt. 1,500–1,600 meters, 1938–39, *Paul C. Standley* 58597 (type in Herb. Field Mus.). Above Pastores, alt. 1,680 meters, damp thicket, December, 1938, *Standley* 60817. Finca El Hato, northeast of Antigua, alt. 1,950–2,040 meters, December, 1938, *Standley* 61197. Barranco above Dueñas, dry, rocky forest, alt. 1,600–1,800 meters, January, 1939, *Standley* 63227. —Dept. Guatemala: Damp, wooded barranco 10 km. south of San Raimundo, alt. 1,800 meters, January, 1939, *Standley* 62895.—Dept. Chimaltenango: Near Finca La Alameda, near Chimaltenango, alt. 1,830 meters, damp thicket, December, 1938, *Standley* 59106.

The species is named for Dr. S. F. Blake, monographer of the genus. In his key to species (Contr. U. S. Nat. Herb. 20: 545. 1924) the present plant runs at once to *A. Pringlei* (Greenm.) Blake, a species known only from the State of Oaxaca, Mexico. That species, known to the writers only from description and illustration, differs in foliage details, especially in its broad-based upper leaves, and seems to be distinct from the Guatemalan plant in various other characters.

Archibaccharis flexilis Blake, Journ. Wash. Acad. Sci. 17: 60. 1927. *Hemibaccharis flexilis* Blake, Contr. U. S. Nat. Herb. 20: 549. 1924.—Based on *Tuerckheim* II.1636 from Cobán, Guatemala, and *Tuerckheim* II.728 from the same region. The plant proves to be rather widely distributed in Guatemala, as indicated by the following collections: Near San José, southeast of Tactic, Alta Verapaz, alt. 1,500 meters, wet thicket, *Standley* 69673. Above Tamahú, Alta Verapaz, alt. 900–1,200 meters, wet forest, *Standley* 70926. Saquijá, 48 km. northeast of Cobán, Alta Verapaz, damp limestone thickets, alt. 1,200 meters, *Standley* 70201. Near Cobán, damp pine forest, alt. 1,260–1,440 meters, *Standley* 69340. Slopes of Volcán de Agua, above Santa María de Jesús, Dept. Sacatepéquez,

alt. 2,250–3,000 meters, moist forest, *Standley* 65058. Hills of Finca Carmona, southeast of Antigua, Dept. Sacatepéquez, alt. 1,600–1,800 meters, damp forest, *Standley* 63698. Quisaché, Dept. Chimaltenango, forested barranco, alt. 1,800 meters, *Standley* 62291. Volcán de Atitlán, alt. 1,620 meters, Dept. Suchitepéquez, *Skutch* 1482. Finca Azucena, above Colomba, Dept. Quezaltenango, alt. 1,320 meters, damp forest, *Standley* 68019. The plant in general appearance as well as in habit differs strikingly from other members of the genus, reminding one somewhat by its habit of the genus *Mikania*. *Archibaccharis flexilis* is a slender, sometimes greatly elongate, woody vine, often climbing high upon tall trees, its branches then dangling far below the tree branches.

Archibaccharis subsessilis Blake, Brittonia 2: 339. 1937.—The plant was collected by Skutch at Nebaj, Dept. Quiché, Guatemala, at 1,890 meters. Several further collections have been made: Guatemala: Dept. San Marcos: Oak forest, Puente de Nahuatl-aa, near San Marcos, alt. 2,280 meters, *Standley* 66251; a shrub of 2 meters, the heads white. Along Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, alt. 2,200–2,500 meters, *Steyermark* 36046, 36059; on dry pine-fir slopes; a shrub 1.5–2.5 meters tall, or suffrutescent and only 30 cm. high; leaves olive-green; flowers white.

Cacalia peltata HBK. Nov. Gen. & Sp. 4: 170. *pl. 361*. 1820.—We find no record of the occurrence in Central America of this Mexican species, but the following collection apparently is referable to it: Guatemala: Dept. Quezaltenango, pine forest, uppermost ridge of Volcán de Santo Tomás, alt. 3,200 meters, January, 1940, *Steyermark* 34933.

Calea peduncularis HBK. Nov. Gen. & Sp. 4: 295. *pl. 408*. 1820.—While this well marked species is widely distributed in southern Mexico, it appears to be rare in Guatemala, and we find no mention of its occurrence in Central America. The following specimens are available from Guatemala: Finca Alameda, near Chimaltenango, alt. 1,800 meters, *J. R. Johnston* 828. Dept. Jalapa, between Miramundo and summit of Montaña Miramundo, between Jalapa and Mataquescuintla, alt. 2,000–2,500 meters, on slopes in open pine woods, *Steyermark* 32742. These collections are referable to var. *epapposa* HBK.

Calea Skutchii Blake, Journ. Wash. Acad. Sci. 24: 438. 1934.—The type was collected by Skutch near Chichavac, Chimaltenango, Guatemala, and there was cited also a specimen from the road above Tecpám, in the same department. That the species is not exactly rare in Guatemala is shown by the following collections: Dept. Chimaltenango: Cerro de Tecpám, alt. 2,400–2,700 meters, in damp thickets or in pine or *Cupressus* forest, a shrub or tree of 3–7.5 meters, *Standley* 60946, 58759, 60941.—Dept. Totonicapán: Cumbre del Aire, between Huehuetenango and Sija, alt. 3,000–3,450 meters, moist thicket, a shrub or small tree, *Standley* 65860.—Dept. San Marcos: Puente de Nahuatl-aa, near San Marcos, alt. 2,280 meters, *Standley* 66261. Barranco Eminencia, alt. 2,100–2,700 meters, *Standley* 68519, 68598. Barrancos south and west of Tajumulco, Volcán de Tajumulco, alt. 2,300–2,500 meters, *Steyermark* 36568. El Boquerón, alt. 2,700 meters, *Cupressus* forest, a shrub or tree of 3–7.5 meters, *Standley* 66299.—Dept. Quezaltenango: Mountains above Ostuncalco, alt. 2,700 meters, *Standley* 66416. Bochantín, alt. 2,370 meters, *Skutch* 1970. Near Aguas Amargas, slopes of Volcán de Zunil, alt. 2,430–2,850 meters, *Standley* 65294. Volcán de Santa María, above Palojunoj, *Standley* 67525. Cumbre de Tuilacán, near San Martín Chile Verde, alt. 2,400 meters, in sandy *Alnus* forest, *Standley* 67821, 67774. Near Fuentes Georginas, Volcán de Zunil, alt. 2,500–2,850 meters, wet forest, *Standley* 67339, 67397, 67387. The plant doubtless extends into the State of Chiapas, Mexico.

Calea Standleyi Steyermark, sp. nov.—Frutex 3–5 m. altus; ramulis teretibus omnino glabris viridibus maculatis purpureo-fuscis, 0.5–1 cm. diam. leviter pentagonis, internodiis superioribus 1–3.5 cm. longis; foliis oppositis longipetiolatis; petiolis nudis viridibus maculatis purpureo-fuscis vel roseo-lavendulis glabris supra sulcatis, 1.5–6 cm. longis; laminis oblongo-ellipticis, 8–17 cm. longis, medio 3–7.5 cm. latis, longiacuminatis, basi sensim attenuatis, praeter apicem basimque serrulatis (dentibus utroque latere 7–26, 2–7 mm. separatis, 0.5–1 mm. altis, apice callosis), nervis primariis utroque latere 2–4, paribus infimis magis conspicuis, lamina ita 5–7-plinervia, pagina inferiore areolato-reticulata; firmiter membranaceis, supra obscuro-viridibus lucentibus glabris, subtus pallidis, praesertim ad nervos pilis minutis simplicibus adpressis conspersis vel glabris; capitulis heterogamis radiatis diffusissime corymbiformi-paniculatis numerosis, 10–60, anthesi 3–3.5 cm. latis, pedunculis basi vel prope basin bracteatis, 2–6 cm. longis, pilosis, pilis multilocularibus plerumque patentibus demum deciduis; involucro 3-seriato obgraduato 4–5 mm. alto, phyllariis extus sparse puberulis firmiter membranaceis vel subcoriaceis, extimis squarrosis oblongo-lanceolatis vel liguliformi-

bus obtusis 4–5 mm. longis, 1–2 mm. latis, viridibus, ceteris oblongis vel ovatis obtusis vel rotundis 2.8–3 mm. longis, 1.5–2 mm. latis, marginibus purpureo-rosaceis; disco ad anthesin 6–7 mm. alto, 7–8 mm. lato; radiis 8–10 albidis hermaphroditis fertilibus, tubo extus puberulo 1.5 mm. longo, lamina oblongo-oblanceolata apice rotundata et minute 3-crenulata plus minusve 7-nervia dorso minute glandulosa 1.8–2 cm. longa, 5 mm. lata; floribus disci multis, ca. 100, omnibus fertilibus, corollis subfusco-luteis vel obscure luteis, glanduloso-puberulis, 3 mm. longis (tubo 1 mm. longo, fauce 1.5 mm. longo, lobis 0.8–1 mm. longis); paleis complicatis concavisve flores hermaphroditos plus minusve amplectentibus, in fructu quam achaeniis latioribus, oblongis vel elliptico-oblongis, apicibus rotundatis, marginibus et apicibus minute erosis, 3.5–4.5 mm. longis, 2 mm. latis, dorso minute puberulis, obtuse carinatis, chartaceis, in statu fructifero prominulis; achaeniis pappiferis, eis disci compresso-tetragonis, latis, acute angulatis, eis radii triquetris, uno latere tantum hispidulo, ca. 2.5 mm. longis, 1–1.2 mm. latis, ad apices hirtellis, subnigris, obovatis vel turbinatis; pappi aristis persistentibus 0.5–1.2 mm. longis, hispidulis et laceratis, eis florum disci plerumque 2, florum radii 3. —Guatemala: Dept. San Marcos: Between Todos Santos and Finca El Porvenir, lower to middle slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, March 1, 1940, *Julian A. Steyermark* 37004 (type in Herb. Field Mus.). Slopes of barrancos tributary to and bordering Río Vega, between San Rafael at northeast portion of Volcán de Tacaná and Guatemala-Mexico line, alt. 2,500–3,000 meters, February 21, 1940, *Steyermark* 36359. Upper banks of barranco, Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, February 20, 1940, *Steyermark* 36277. Between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, February 22, 1940, *Steyermark* 36431.

Local name Altamisa. With its long, white rays, *Calea Standleyi* is by far the handsomest and showiest species of the genus. The pappus of 2–3 stout awns, numerous loosely corymbose heads on much elongate peduncles, serrulate, long-acuminate, and especially long-petiolate, peculiarly 4–8-nerved leaves which are glabrous or nearly so throughout, combined with the long, white rays, dull yellow disk flowers, fruticose habit, and glabrous stems, combine to make this species very distinct from all others. It is related to *Calea orizabaensis* Klatt which, however, has closely crowded heads on very short peduncles, shorter rays, much shorter petioles, sinuate-undulate leaf margins, and pubescent blades and branches. From *C.*

pachyphylla (Klatt) Blake it is easily separated by its long petioles, much larger and broader, differently nerved, serrulate leaves; from *C. guatemalensis* D. Sm. by its white and much longer rays and by leaf characters, and from *C. integrifolia* (DC.) Hemsl. by its more numerous and longer rays, much larger, loosely arranged instead of closely cymose heads, and long-petiolate, much larger, thinner leaves.

Erigeron aquarius Standl. & Steyerm., sp. nov.—Herba ramosa suberecta vel decumbens 30–60 cm. alta, caulibus tortuosis sat dense pilis longis albidis patulis laxis pilosis in sicco substriatis multifoliatis, internodiis plerumque foliis brevioribus; folia sessilia herbacea anguste oblongo-lanceolata usque lineari-oblanceolata plerumque 2.5–6.5 cm. longa et 6–11 mm. lata acuta vel subobtusa et apiculata, basin versus sensim angustata, basi ipsa acuta vel late cuneata, integra vel praesertim in foliis majoribus remote crenato-serrata, serraturis paucis, fere concoloria, utrinque pilis longiusculis patulis densiuscule pilosa; capitula numerosa ramos terminantia et singula, pedunculis valde elongatis gracilibus dense patulo-pilosis, bracteis paucis valde reductis linearibus vel anguste lanceolatis; involucrum late campanulatum ca. 8 mm. altum et 12 mm. latum; phyllaria 2–3-seriata inaequalia subadpressa linearia attenuata pallido-marginata, sparse pilis brevibus adpresso-pilosa; radii albi numerosissimi anguste lineares ca. 3 mm. longi in sicco erecti vel recurvi et revoluti; receptaculum subconvexum 3 mm. latum; corollae disci fere filiformes 4.5 mm. longae glabrae luteae; achaenia matura non visa, juvenilia brevia sparse adpresso-hispidula, pappi setis rigidiusculis fulvescentibus.—Guatemala: Dept. Sacatepéquez, slopes of Volcán de Agua, above Santa María de Jesús, alt. 2,250–3,000 meters, in moist forest, Feb. 11, 1939, *Paul C. Standley* 65053 (type in Herb. Field Mus.); also No. 65164, from the same region.

It is difficult to suggest any definite relationship for this species, which is a plant of decidedly ordinary appearance, and with no outstanding characters. It has been impossible to associate it satisfactorily with any species reported from Guatemala or southern Mexico.

Eupatorium angulifolium Robinson, Contr. Gray Herb. 65: 46. 1922.—The species was based on *Salvin & Godman* 265 from Barranco Hondo, Guatemala, and no other material has been reported. The following good series of specimens, mostly from the vicinity of the type locality, well illustrates the species and gives some idea of its variations: Guatemala: Dept. Sacatepéquez, Ba-

rranco Hondo, lower slopes of Volcán de Fuego, alt. 1,800 meters, *Standley* 60249. Dept. Sacatépéquez, near Las Lajas, common, alt. 1,200 meters, *Standley* 58139. Dept. Chimaltenango, shaded bank, Quisaché, alt. 1,800 meters, *Standley* 62311. Dept. Escuintla, along Río Guacalate, alt. 500–550 meters, *Standley* 58265. Dept. Quezaltenango, high barranco along Río Samalá, between Santa María de Jesús and Calahuaché, alt. 1,200–1,300 meters, *Steyermark* 33901. The plant is an exceptionally handsome and conspicuous one, growing almost always on the faces of wet cliffs or earth banks in shade. The very large and thin leaves, as much as 25 cm. long and almost as wide, are mostly clustered at the middle or top of the stem, the lax panicle of lavender heads rising well above them. The plants are simple and 30–100 cm. in height. In describing *E. angulifolium* Robinson compared it with *E. Petasites* Griseb., which was based on plants grown in Europe from supposedly Central American seed, its exact origin unknown. The differences emphasized as separating the two species scarcely hold when this recent series of specimens is examined, and it is suspected that the name *E. angulifolium* should fall into the synonymy of *E. Petasites.*

Eupatorium antiquorum Standl. & Steyerm., sp. nov.—Herba erecta ca. metralis simplex vel ut videtur sparse saltem superne ramosa, caule gracili tereti sat dense pilis longis patulis mollibus multilocularibus laxis villoso, internodiis bene elongatis plerumque 7–10 cm. longis; folia modica opposita remota longipetiolata membranacea, petiolo gracili 2–3 cm. longo dense villoso, foliis supremis tantum breviter petiolatis; lamina deltoidea vel ovato-deltoidea 5–6.5 cm. longa 3.5–4.5 cm. prope basin lata, longiacuminata, basi truncata vel breviter cordata, in fere toto margine arcte crenata, solemniter trinervia, ima basi 5-nervia, nervis exterioribus latere exteriore nervos plures emittentibus, supra viridis densiuscule pilis laxis villosa, subtus vix pallidior, ubique longivillosa; capitula parva numerosa cymosa, cymis laxis paniculam terminalem foliis reductis onustam 15–17 cm. longam et aequilatam efformantibus, ramis dense villosis, bracteis foliaceis lanceolatis, pedicellis plerumque 6–12 mm. longis; involucrum 4–4.5 mm. latum campanulare, phyllariis 2–3-seriatis, interioribus lineari-oblongis viridescentibus glabris 2–3-costatis ciliatis, apice obtusis vel rotundatis, extimis duplo brevioribus ovatis vel ovato-oblongis acutis vel acutiusculis; flores ca. 15 albi involucro vix longiores; corolla tubulosa glabra 2 mm. longa, lobis brevissimis late ovatis obtusis; achaenia columnaria nigrescentia 1.8 mm. longa obtuse angulata minute scaberula vel fere glabra, pappi

setis albis 2 mm. longis.—Guatemala: Near Antigua, Dept. Sacatepéquez, alt. 1,500–1,600 meters, in *Cupressus* grove, December 18, 1938, *Paul C. Standley* 60304 (type in Herb. Field Mus.).

A well marked species, not found elsewhere, although certainly it can not be confined to this locality. Special characters are the beautifully deltoid, closely crenate leaves and the copious, long, soft, spreading pubescence.

Eupatorium carmonis Standl. & Steyerm., sp. nov.—Herba erecta fere metralis simplex, caule gracili tereti in sicco olivaceo-brunnescenti fere glabro, parte juniore minute puberula, internodiis bene elongatis; folia numerosa sed remota modica vel majuscula longipetiolata tenuiter membranacea, petiolo gracili vulgo 3–4 cm. longo minute sparseque puberulo, superne anguste alato; lamina ovata, rhombico-ovata vel lanceolato-ovata vulgo 8.5–12.5 cm. longa et 4.5–5.5 cm. lata, breviter vel longius acuminata, prope basin subito contracta et attenuato-decurrens, ubique supra basin fere aequaliter arcteque serrata, utrinque fere glabra sed hinc inde sparsissime pilis minutis albidis praesertim ad nervos scaberula, subtus fere concolor, supra basin 5-plinervia; inflorescentia terminalis corymbiformis, capitulis parvis albis numerosis dense aggregatis, corymbo fere 3 cm. alto et 5 cm. lato, foliis multo breviore, capitulis sessilibus vel saepius breviter pedicellatis, pedicellis dense sordido-puberulis; involucrum 3–3.5 mm. altum campanulatum, phyllariis ca. biseriatis fere aequalibus viridescentibus 2-nerviis pallide marginatis acutis sparse puberulis vel pilosulis; corollae ca. 2.2 mm. longae glabrae anguste tubulosae; pappi setae albae 2.5 mm. longae; achaenia juvenilia glabra.—Guatemala: Damp forest, hills of Finca Carmona, southeast of Antigua, Dept. Sacatepéquez, alt. 1,600–1,800 meters, January 27, 1939, *Paul C. Standley* 63743 (type in Herb. Field Mus.).

The single available specimen is in early anthesis, and perhaps not altogether typical of the species. The plant, however, differs definitely from each of the numerous species with which it has been compared. The heads are remarkably small, and closely crowded in the small and inconspicuous corymb.

Eupatorium hastiferum Standl. & Steyerm., sp. nov.—Frutex 2.5 m. altus, ramis tetragonis in sicco fuscis glabris, internodiis superioribus plerumque 3–5 cm. longis; folia majuscula longipetiolata herbacea in sicco fusca, petiolo gracili 2–4 cm. longo glabro, basi valde dilatato et in pseudostipulam magnam undulatam amplexicaulem expanso; lamina variabilis deltoidea usque late ovata vel anguste triangularis 6.5–12 cm. longa 6–10 cm. lata longissime angusteque attenuato-acuminata, basi late rotundata usque subcordata, lateribus prope basin rotundatis vel saepius angulatis, lamina ita saepe hastato-lobata, margine arcte minute serrato, basi trinervia, supra minute ad nervos venasque puberula, aliter fere glabra, subtus paullo pallidior, fere omnino glabra, nervis venisque prominentibus laxe reticulatis; inflorescentia terminalis corymbiformis rotundata ca. 10 cm. alta et 15–18 cm. lata, sparse foliata, ramis primariis elongatis nudis, capitulis campanulatis majusculis numerosissimis in cymas sublaxas rotundatas aggregatis, pedicellis gracilibus plerumque 3–8 mm. longis minute puberulis; involucrum 6–7 mm. altum, phyllariis ca. 3-seriatis, gradatis, interioribus oblongis apice rotundatis fere glabris 3–5-nerviis pallidis, extimis brevissimis late ovatis vel fere orbicularibus apice rotundatis vel obtusis; flores ca. 20 ut videtur albi; corollae fere filiformes 5.5 mm. longae glabrae; achaenia columnaria 2 mm. longa 4-angulata fere omnino glabra nigrescentia, pappi setis albis 4 mm. longis.—Guatemala: In wet forest, mountains east of Tactic, Dept. Alta Verapaz, on the road to Tamahú, alt. 1,500–1,650 meters, April 9, 1939, *Paul C. Standley* 71125 (type in Herb. Field Mus.).

A well marked species, noteworthy for the chiefly hastate leaves, and for the dilated bases of the petioles.

Eupatorium huehuetecum Standl. & Steyerm., sp. nov.—Herba erecta ca. metralis ramosa(?), caulibus gracilibus teretibus brunnescentibus obscure striatis, novellis sparse minuteque puberulis, internodiis plerumque elongatis interdum foliis longioribus; folia parva longipetiolata membranacea opposita, petiolo gracili 1–2 cm. longo minutissime puberulo vel fere glabro; lamina oblongo-ovata vel lanceolato-oblonga 4.5–6.5 cm. longa 1.5–2.2 cm. lata acuta vel breviter acuminata, basi acuta vel subobtusa et saepe paullo inaequalis, supra fusco-viridis adpresso-hispidula et tactu asperula, subtus paullo pallidior fere omnino glabra, bene supra basin 5-plinervia, nervis venisque prominentibus laxe reticulatis; capitula parva alba numerosa in cymas parvas rotundatas subdensas aggregata, cymis paniculam rotundatam foliatam 6–12 cm. longam angustam efformantibus, foliis inflorescentiae reductis et fere bracteiformibus parvis, supremis parvis linearibus, pedicellis plerumque 2–6 mm. longis gracillimis griseo-puberulis; involucrum campanulare 4 mm. altum, phyllariis linearibus fere omnibus aequalibus acutis vel obtusis pallidis plerumque 2-nerviis pallide marginatis dorso sparse puberulis, apice ciliatis; flores ca. 30; corollae glabrae, tubo filiformi superne subito in faucem dilatato, lobis minutis brevissimis; achaenia juve-

nilia ca. 1.2 mm. longa glabra, pappi setis albis 2 mm. longis.—Guatemala: Moist thicket, Río Pucal, Dept. Huehuetenango, alt. 1,775 meters, February 20, 1939, *Paul C. Standley* 65798 (type in Herb. Field Mus.).

A plant of most ordinary appearance, with no outstanding characters, but not exactly matched by any *Eupatorium* species known from Guatemala or southern Mexico.

Eupatorium oresbioides Robinson, Proc. Amer. Acad. 44: 618. 1909; in Standl. Contr. U. S. Nat. Herb. 23: 1450. 1926. —The species was described from Oaxaca, Mexico, and is reported also by Robinson (loc. cit.) from Guatemala. It is found to be a common plant in the latter country, as the following collections show. The species seems to be too close to *E. oresbium* Robinson, of Morelos, Mexico, but perhaps can be maintained as distinct. The leaves are variable in the Guatemalan plants, and are not always angled on the sides, near the base, as described originally. Guatemala: Dept. Sacatepéquez: Cuesta de las Cañas, above Antigua, alt. 1,950 meters, wet thicket, *Standley* 58969; a shrub of 3 meters, the heads pale purple; also No. 58951.—Dept. Chimaltenango: Quisaché, alt. 1,800 meters, moist, forested barranco, *Standley* 62024; a shrub of 1.8 meters, the heads lavender. Volcán de Acatenango, above Las Calderas, alt. 1,800-2,700 meters, in damp or wet forest, *Standley* 60054, 61814, 61950; a shrub of 1.5–3 meters, common, the heads lavender.—Dept. Quezaltenango: Slopes of Volcán de Zunil, above Aguas Amargas, alt. 2,430–2,850 meters, moist or wet forest, *Standley* 65293, 65438.—Dept. San Marcos: Barranco Eminencia, above San Rafael Pie de la Cuesta, wet forest, alt. 2,100–2,400 meters, *Standley* 68621; a shrub or tree of 3–4.5 meters, the heads bright purple. Along Río Tacaná, above San Antonio, wet thicket by stream, alt. 2,460 meters, *Standley* 66144. Puente de Nahuatl-aa, near San Marcos, alt. 2,280 meters, damp ravine, *Standley* 66230.

Eupatorium ovillum Standl. & Steyerm., sp. nov.—Frutex ramosus 1.5 m. altus, ramis crassiusculis brunneis dense viscido-puberulis teretibus, internodiis brevibus vel elongatis; folia inter minima opposita numerosa petiolata crasse membranacea, petiolo crassiusculo 6–14 mm. longo sordide viscido-puberulo; lamina late ovata vel rotundato-ovata 1.5–3 cm. longa 1–2.5 cm. lata acuta usque obtusissima, basi late rotundata vel truncata, remote obscure crenata vel subintegra, supra viridis sparse minute granuloso-puberula vel fere glabra, venis non elevatis, subtus pallidior dense minute glanduloso-punctata, paullo supra basin triplinervia, nervis prominentibus,

media supra basin utroque latere nervum 1 emittente, venis obscuris; capitula modica purpurascenti-alba in cymulas parvas rotundatas vel corymbiformes ramos breves foliatos terminantes aggregata, cymulis paniculam angustam elongatam foliatam efformantibus, pedicellis gracilibus usque 7 mm. longis viscido-puberulis; involucra anguste campanulata 7–8 mm. longa, phyllariis paucis vix ultra 10 valde inaequalibus biseriatis linearibus acutis vel attenuatis 2–3-costatis viridescentibus sparse minute viscido-puberulis; flores ca. 10; corollae glabrae ca. 5 mm. longae, tubo gracili sursum paullo sensim dilatato, lobis brevissimis anguste ovatis acutis; achaenia immatura 2.3 mm. longa glabra, pappi setis albis 4 mm. longis minute scaberulis.—Guatemala: Moist thicket, Cumbre del Aire, Dept. Totonicapán, on the road between Huehuetenango and Sija, alt. 3,000–3,450 meters, February 20, 1939, *Paul C. Standley* 65862 (type in Herb. Field Mus.). Along road east of Los Encuentros, Dept. Sololá, alt. 2,400–2,850 meters, January 11, 1939, brushy slope, *Standley* 62355 (specimen sterile, but evidently conspecific with the type).

Eupatorium ovillum is a rather isolated species, in habit and foliage slightly suggestive of the genus *Mikania*. Distinguishing characters are the small leaves, with rather pale under surface, and the few, very unequal phyllaries. The specific name refers to the omnipresent and all too numerous (at least for botanical collectors) sheep of the region in which the type was collected.

Gnaphalium brachyphyllum Greenm. Field Mus. Bot. 2: 267. 1907.—The species was based on *Kellerman* 5301, collected on Cerro Quemado, just outside the city of Quezaltenango, Guatemala. So far as we know, no further material of the species has been reported, but as a matter of fact the plant is common and almost weedy in the vicinity of Quezaltenango and elsewhere in the Occidente of Guatemala. The following collections are at hand: Dept. Quezaltenango: Volcán de Santa María, Dept. Quezaltenango, alt. 1,350 meters (the elevation seems rather improbable), *Kellerman* 6331. Near Quezaltenango, alt. 2,280–2,400 meters, *Standley* 67284; on steep bank, in dense clumps, *Standley* 66418. Cerro La Pedrera, south of Quezaltenango, dry, rocky hillside, alt. 2,400 meters, *Standley* 65550; an herb 30 cm. high.—Dept. San Marcos: Vicinity of Sibinal, alt. 2,500 meters, dry, white clay slopes on ridge leading toward Volcán de Tacaná, *Steyermark* 35959, 35968.—Dept. Chimaltenango: Barranco La Sierra, southeast of Patzúm, pine and oak forest, common, alt. 2,100 meters, *Standley* 61665.

Neurolaena macrophylla Greenm. Proc. Amer. Acad. 39: 118. 1903.—The type is from Chicharras, Chiapas, Mexico, and in *North American Flora* (34: 308. 1927) the species is reported only from Chiapas. It is now known to extend into Central America: Guatemala: Dept. Suchitepéquez, in woods, Finca Moca, alt. 900 meters, *Skutch* 2055; a shrub or small tree, to 7.5 meters in height; flowers yellow. Dept. Quezaltenango, Finca Pireneos, lower south-facing slopes of Volcán de Santa María, alt. 1,300–1,500 meters, damp thicket, *Standley* 68437; *Steyermark* 33224; a coarse herb or shrub 2–2.5 meters tall; heads yellow or greenish yellow.

Oxylobus adscendens (Schultz Bip.) Rob. & Greenm. Proc. Amer. Acad. 41: 272. 1905. *Ageratum adscendens* Schultz Bip. ex Hemsl. Biol. Centr. Amer. Bot. 2: 80. 1881.—Described from the Volcán de Orizaba, the plant is known from the states of Mexico, Puebla, and Hidalgo in Mexico. Only recently has it been found in Guatemala: Dept. San Marcos, between San Sebastián and summit of Volcán de Tajumulco, alt. 3,800–4,600 meters, February, 1940, *Steyermark* 35512. Local name Bretónica. An herb growing among dry, rocky bunchgrass in open, grassy groves between the pine tree area and halfway to the summit; phyllaries dull green, tinged outside with purplish; peduncle dull magenta; leaves subcoriaceous, grass-green.

Oxylobus glanduliferus (Schultz Bip.) Gray ex Klatt, Leopoldina 20: 75. 1884. *Ageratum glanduliferum* Schultz Bip. ex Hemsl. Biol. Centr. Amer. Bot. 2: 82. 1881.—Described from the state of Oaxaca, Mexico, and in the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 1423. 1926) reported by Blake only from that state. The following recent collections indicate a wider range for the species: Mexico: Mount Tacaná, Chiapas, alt. 2,000–4,038 meters, *Matuda* 2320 (determined by Blake).—Guatemala: Volcán de Santa María, Dept. Quezaltenango, *Skutch* 857. Volcán de Santa María, in forest at 3,300 meters, *Standley* 67688; a very viscid herb a meter high, the flowers white. Dept. San Marcos, between San Sebastián and summit of Volcán de Tajumulco, alt. 3,800–4,600 meters, *Steyermark* 35557; a shrub about a meter high; leaves glutinous, dull green; flowers white; the plant has the odor of black pepper, noticeable at a distance of two feet. Dept. San Marcos, between Sibinal and summit of Volcán de Tacaná, alt. 2,500–4,400 meters, upper, dry slopes, *Steyermark* 36141.

Pacourina edulis Aubl. Pl. Guian. 800. *pl. 316*. 1775.—Although this composite has a wide range in South America, from Colombia to

Paraguay, it seems to be rather rare or at least sporadic in occurrence. So far as we know, in continental North America it has been reported only from Nicaragua. The following collection proves its existence farther northward: Guatemala: Dept. Jutiapa, Lago de Atescatempa, south of Asunción Mita, alt. 500–800 meters, November, 1939, *Steyermark* 31876. Growing in water 60–90 cm. deep; stems inflated, 2–3 cm. thick, light green; leaves with spine-tipped teeth, dark green above; heads sessile in the leaf axils, the bracts dull green bordered with white; flowers rose-lilac. It is of interest to note Aublet's statement that his plant grew in land inundated by the tide. Weddell reports the local name of Palo de yesca for his collection of the species made in Paraguay.

Perezia carpholepis (Sch. Bip.) Gray, Proc. Amer. Acad. 19: 60. 1883. *Acourtia carpholepis* Sch. Bip. ex Gray, loc. cit. in syn.—The species is cited by Bacigalupi (Contr. Gray Herb. 97: 36. 1931) only from the states of Puebla and Chiapas, Mexico, the collections reported being only those known when the species was first described. No authentic material is available for comparison, but the following collections agree in almost every detail with Bacigalupi's description of the Mexican specimens: Guatemala: Dept. Sacatepéquez: Finca El Hato, northeast of Antigua, alt. 1,950–2,040 meters, oak forest, a weak, reclining herb 1–2 meters long, scarce, *Standley* 61149. Near Antigua, brushy slope, erect, rare, sterile, alt. 1,500–1,600 meters, *Standley* 61746.—Dept. Jalapa: La Laguna, Volcán Jumay, 1 mile north of Jalapa, alt. 1,400–1,600 meters, *Steyermark* 32301; climbing and sprawling on sides of barranco in oak thickets; flowers lilac; leaves pale grass-green.

Perezia reticulata (Lag.) Gray, Pl. Wright. 1: 128. 1852. *Proustia reticulata* Lag. ex D. Don, Trans. Linn. Soc. 16: 200. 1830. *Perdicium serrulatum* Sessé & Moc. ex D. Don, loc. cit. in syn.—In Bacigalupi's account of the genus *Perezia* this species (Contr. Gray Herb. 97: 37. 1931) is reported from Mexico only, but it extends into Guatemala: Dept. Guatemala, in 1939, *Ignacio Aguilar* 380. Dept. Guatemala, near Amatitlán, brushy slope, alt, 1,170 meters, rare, an herb a meter high, *Standley* 61261. The second collection is sterile, but agrees with the Aguilar plant, which is in flower. It may be noted that *Perdicium serrulatum* is represented in the Sessé & Mociño Herbarium by No. 3082 (also as No. 1584), the label bearing this name. No. 3377, a second specimen obviously of the same species, bears another and quite different specific name under the generic name of *Perdicium*.

Perymenium ruacophilum Donn. Smith, Bot. Gaz. 55: 437. 1913.—The type was collected on the Volcán de Santa María, Dept. Quezaltenango, Guatemala, at 2,500–3,500 meters, *E. W. Nelson* 3727. The elevation given includes the whole northern slope of the volcano, along which the collector probably ascended the peak, and one can only guess in which particular belt of vegetation the type specimen may have been collected. The following collections agree perfectly with the original description of the species, of which the writers have seen no authentic material: Guatemala: Dept. Quezaltenango, uppermost wooded ridge of Volcán de Santo Tomás, alt. 3,200 meters, *Steyermark* 34810; shrubby, 2.5–3 meters tall; leaves firmly membranaceous, rich grass-green above, paler green beneath; rays white; disk brown-yellow; involucre pale green, tinged at the top with dark brown. Mountains southeast of Palestina, alt. 2,700 meters, damp, dense forest, *Standley* 66332; a weak herb, the rays white. Pine and fir forest, Volcán de Zunil, alt. 2,500–3,800 meters, *Steyermark* 34721; local name Sajoc; a shrubby vine 1.5–3 meters tall; disk brownish yellow, the rays white.—Dept. Sacatepéquez: Slopes of Volcán de Agua, above Santa María de Jesús, alt. 2,250–3,000 meters, damp forest, *Standley* 65163; an erect herb 1–2 meters high, scarce.—Dept. Chimaltenango: Cerro de Tecpám, region of Santa Elena, alt. 2,700 meters, damp thicket, *Standley* 58668; an herb a meter high. The species is noteworthy in the genus for its rather handsome heads with long, showy, white rays.

Piqueria Standleyi Robinson, Contr. Gray Herb. 104: 4. 1934. —The Sierra de Apaneca, Salvador, is the type locality of this species, which has been recorded only from the type. The shrub is common in nearby Guatemala, where it extends as far westward at least as the Department of Suchitepéquez. The following collections are in the Herbarium of Field Museum: Dept. Santa Rosa: Dry slopes of barranco, south-facing slopes of Volcán de Tecuamburro, north of Chiquimulilla, alt. 250–500 meters, *Steyermark* 33133. Near Oratorio, alt. 1,200 meters, damp forest, *Standley* 60669; a shrub of 1.5 meters, the flowers white.—Dept. Escuintla: San Antonio Jute, alt. 780 meters, dry thicket, *Standley* 64898; a slender shrub of 1.8 meters. Near Escuintla, damp thicket, alt. 135–300 meters, *Standley* 63937. Río Guacalate, alt. 500–600 meters, damp thicket, *Standley* 60162, 58259.—Dept. Sacatepéquez: Near Las Lajas, brushy slope, alt. 1,200 meters, *Standley* 58063; a slender shrub 1–1.5 meters high, common.—Dept. Suchitepéquez: Along Río Madre Vieja above Patulul, alt. 450 meters, damp thicket, *Standley* 62201. The collec-

tions cited have been compared with the type in the U. S. National Herbarium, kindly lent for study by Dr. William R. Maxon. The type is a poor specimen, with much reduced inflorescence, and the original description of the species does not give a good picture of the plant as it is in a well developed state.

Polymnia quichensis Coult. Bot. Gaz. 20: 48. 1895.—The type was collected by Heyde and Lux at Chiul, Dept. Quiché, Guatemala, at 2,400 meters. Apparently the species is known only from Guatemala, the following collections being at hand: Dept. Jalapa: Vicinity of Soledad, Montaña Miramundo, between Jalapa and Mataquescuintla, alt. 2,000–2,500 meters, along the border of cloud forest, *Steyermark* 32621; local name Carricillo; an herb 3 meters tall; leaves grass-green on both sides; stems purple; rays yellow.—Dept. San Marcos: Region of Barranco Eminencia, above San Rafael Pie de la Cuesta, alt. 2,100–2,700 meters, *Standley* 68555, 68575, 68472; an herb 1–1.5 meters high; heads yellow. The foliage is exceedingly variable, and the pubescence inconstant. It may be that with more ample material, more than a single species can be recognized.

Rensonia salvadorica Blake, Journ. Wash. Acad. 13: 145. 1923; op. cit. 17: 62. *f. 1.* 1927.—A monotypic genus, confined, apparently, to the Pacific slope of Central America, described originally from Salvador, and reported also from Guanacaste, Costa Rica. The plant is rather common and widely distributed also in Guatemala: Dept. Suchitepéquez, edge of thicket, Finca Moca, alt. 930 meters, a shrub of 3.5 meters, *Skutch* 1572. Dept. Suchitepéquez, along Río Madre Vieja, above Patulul, alt. 450 meters, rocky thicket, a tree of 6 meters, *Standley* 62236. Dept. Sacatepéquez, near Las Lajas, alt. 1,200 meters, damp thicket, a shrub of 3 meters, *Standley* 58110, 58136. Dept. Escuintla, near Las Lajas, alt. 1,200 meters, moist thicket, a shrub of 3 meters, *Standley* 58148. Dept. Santa Rosa, Volcán Tecuamburro, along trail to San Francisco Tecuamburro, middle slopes of forested barranco, a shrub or tree of 4.5–6 meters, *Steyermark* 33163.

One of the handsomest and showiest of the Compositae ever collected has been found recently in the mountains of western Guatemala by the authors on separate expeditions to that country. One would naturally suppose that a plant with such large and showy flowers would have been described long ago, but, surprisingly, the plant appears not only to be an undescribed species, but to possess highly distinctive generic characters that clearly segregate it from all other genera of Compositae. The plant is, therefore, remarkable not only for its exceptional beauty, but also because it possesses many characters that immediately set it off as a new genus.

It is with great pleasure that the authors dedicate this genus to Professor Ulises Rojas, Director of the Botanical Garden of Guatemala, professor of botany in the schools of Guatemala, and author of several botanical textbooks. Professor Rojas has shown the authors every possible courtesy and generously provided them with many facilities while they were conducting field work in Guatemala. Moreover, he personally accompanied the senior author when this new genus was discovered, so that it is particularly appropriate that his name should be associated with this plant. It is easily one of the half dozen most handsome and showy ones of all Central America, and in beauty is scarcely surpassed by any other.

Rojasianthe Standl. & Steyerm., gen. nov.—Herbae elatae fruticosae ramosae, ramis oppositis; folia opposita magna longipetiolata palmatinervia saepius lobata vel angulata atque dentata; pedunculi paullo apice incrassati et dilatati, in statu fructifero subfistulosi; capitula heterogama magna radiata ad apices ramulorum cymose disposita; flores radii ligulati neutri uniseriati, ligulis albis, pappi setis pluribus brevibus sursum serrulatis caducis; flores disci hermaphroditi tubulosi numerosi, omnibus fertilibus, setis pappi ca. 10 linearibus subaequalibus sursum serrulatis basi et apice longiattenuatis; corollae tubus albus limbo duplo brevior, limbo ampliato elongato superne nigro profunde 5-fido, dentibus nigris; involucrum late hemisphericum biseriatum, phyllariis interioribus 8–10 subaequalibus imbricatis subgraduatis membranaceis basi liberis paullo scarioso-marginatis, phyllariis exterioribus crassioribus brevioribus angustioribus reflexis; receptaculum planum vel subconvexum paleaceum; paleae flores omnes amplectentes, in statu fructifero solemniter accrescentes, profunde 10–12-pectinatae; filamenta brevia dense pilosula; antherae basi integrae obtusae, appendice terminali ovato acutiusculo; achaenia matura epapposa subcompressa, aliquanto tetragona, obovata, apice subtruncata et oblique subasymmetrica.

Type species, *Rojasianthe superba* Standl. & Steyerm., sp. nov.

Tall, fruticose herbs, the stems upright, several from the base, ligneous, hollow, jointed, simple below, branched above, terete, corky-lenticellate. Branches opposite. Leaves opposite, long-petiolate, large, divaricate-spreading, 3–7-palmate-nerved, mucronate-dentate, usually more or less lobed or angled. Peduncles slightly thickened and ampliate just below the heads, in fruit slightly fistulose. Heads heterogamous, radiate, large and very showy, few to several, terminating the branches, cymosely arranged. Ray flowers neutral, ligulate, spreading, acuminate and entire at the apex, white or tinged with pale lilac or pink, showy, 1-seriate, the pappus of several short, upwardly serrate, caducous awns. Disk flowers perfect, tubular, regular, numerous, 200 or more, all fertile, with a caducous pappus of about 10 linear, subequal, upwardly serrate awns long-tapering at base and apex. Disk flowers constricted into a white corolla tube one-third the length of the corolla, the limb ampliate, elongate, black in the upper half, deeply 5-fid, the lobes about two-thirds the length of the limb, black. Involucre broadly hemispheric, 2-seriate, resembling that of *Dahlia*, the inner bracts 8–10, large, overlapping, subequal, the innermost ones the largest, slightly graduated, membranaceous, free at the base, slightly scarious-margined, in bud erect and completely covering the flowers, in anthesis spreading, with upwardly curved margins, the outer bracts more indurate, more firmly membranaceous, shorter and narrower than those of the inner series, of which 6–8 are reflexed in bud and in anthesis. Receptacle flat or very slightly convex, conspicuously paleaceous. Pales uniformly subtending and nearly encircling the ray and disk florets, enlarging in fruit, each pale deeply 10–12-bristly-pectinate, the processes in fruit conspicuous and becoming indurate and spinose-bristly. Filaments short, densely pilosulous with short, white, subequal, multicellular hairs in the upper half. Anthers entire and obtuse at the base, the appendage at the apex ovate, acutish. Style branches of the disk florets elongate, oblanceolate, acute, short-puberulous on the dorsal surface. Pappus of about 10 slightly unequal, slender awns, upwardly serrate with 11–20 upwardly curved, slender teeth on the margins, slenderly tapering at the base and tip, very caducous. Achenes epappose, somewhat dorsally compressed, somewhat tetragonous, obovate, subtruncate and slightly and obliquely asymmetric at the top, sparsely appressed-puberulous on the surface, the lateral margins acutely angled, the dorsal and ventral surfaces obtusely keeled.

This genus is remarkable in many respects. While its conspicuously paleaceous receptacle, ecaudate-based anthers, somewhat tetragonous achenes, and opposite leaves ally it apparently to the tribe *Heliantheae*, other characters it possesses are so distinct as to set it off immediately from any known genus in the family. Its large, deeply pectinate-bristly pales, greatly enlarging in fruit, have no

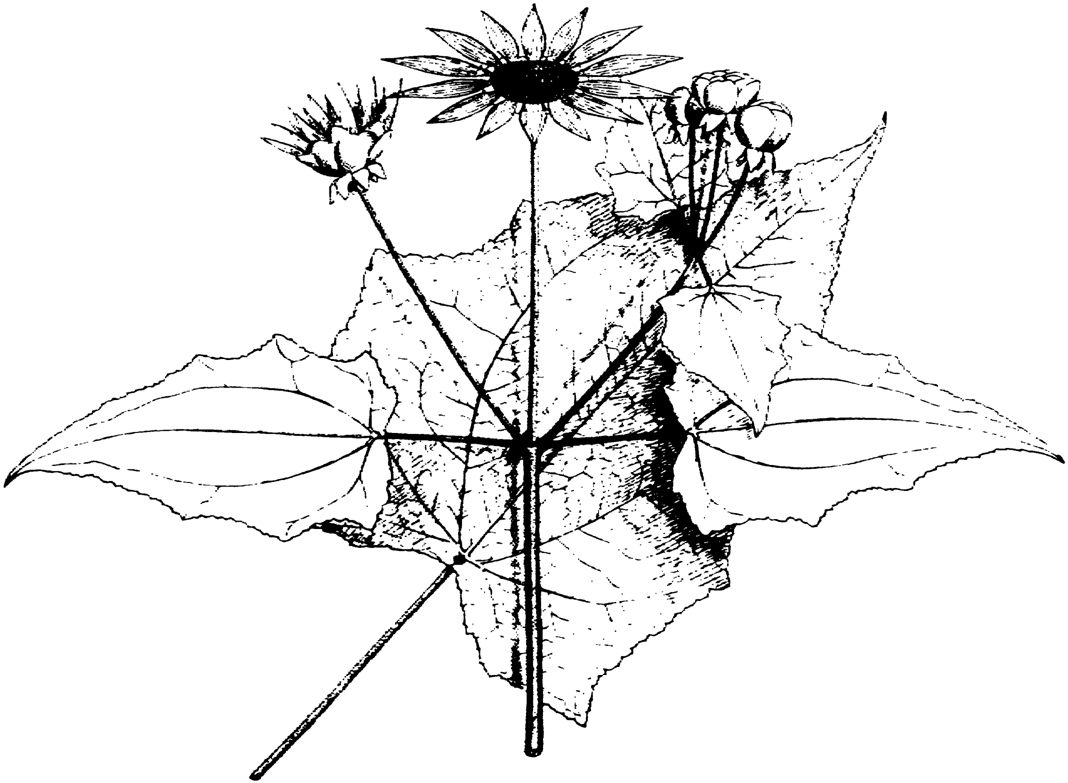

FIG. 1. Flowering branch of *Rojasianthe superba*, with a single detached leaf from the main stem.

duplicate among the *Heliantheae.* Of course, in such genera of the *Heliantheae* as *Echinacea,* the tips of the pales become rigid and spinose, and are simulated in fruit by the indurate, pectinate processes of *Rojasianthe.* In general and superficial characters of shrubby habit, large, opposite leaves, and showy heads the genus resembles some species of *Montanoa,* but the characteristic scarious, locular-like, convex-encircling, mostly entire pales and entirely different pappus or lack of it, and yellow disk flowers in the latter genus distinguish it at once from *Rojasianthe.* The heterogamous heads of *Rojasianthe* with their black disk flowers and white or lilac-tinged ray flowers are not matched elsewhere in the *Heliantheae.* The large heads of *Rojasianthe* combined with its 2-seriate involucre and hollow, jointed stems filled with liquid, simulate some of the large, shrubby species of *Dahlia,* but the latter genus is unlike *Rojasianthe* in its more elongate style branches, pinnate leaves (except in *Dahlia cardiophylla* Blake & Sheriff), subentire pales, epappose flowers, yellow disk flowers, and short corolla lobes of the disk flowers. The very caducous pappus of approximately 10 slender, serrate awns allies *Rojasianthe* in the *Heliantheae* to *Perymenium* and *Melanthera,* and to such species of *Perymenium* as *P. ruacophilum* D. Sm. and *P. grande* Hemsl., but these genera are at once distinguished from *Rojasianthe* in possessing entirely different pales, yellow or brownish disk flowers, much smaller heads, and usually fertile ray flowers. No matter how closely *Rojasianthe* is compared with other genera, its combination of large, showy heads, black, wholly fertile disk flowers, white or lilac-tinged, neutral rays, deeply pectinate-bristly pales (conspicuously enlarged in fruit), pappus of about 10 very caducous, slender awns, 2-seriate involucre, opposite leaves, densely pilosulous filaments, epappose achenes, and long corolla lobes of the disk flowers separates it from any known genus of Compositae.

Its affinities with the *Heliantheae* are emphasized by the rank odor of the leaves and involucre, typical of many helianthoid plants, especially *Ambrosia trifida, Iva ciliata,* and *Helianthus.* If one stresses the character of the caducous, numerous, slender pappus bristles in *Rojasianthe,* the latter may be placed near *Perymenium* in the subtribe *Verbesineae* of Bentham and Hooker, to which group it does not bear much resemblance. If, on the other hand, its general habit, appearance, and 2-seriate involucre suggest, at least superficially, its affinities with *Dahlia* in the subtribe *Coreopsidae,* it may, then, be more properly placed there. Within the *Coreopsidae,* however, *Rojasianthe* has no near relative, with its many-awned, very caducous pappus and pectinate-bristly pales.

Rojasianthe superba Standl. & Steyerm., sp. nov.—Herba fruticosa 3–6-metralis; folii lamina ovata usque late triangulari-ovata, acuminata usque caudata, basi truncata vel cordata, utroque latere 2–4-angulata, marginibus mucronato-crenatis, palmatim 3–7-nervia, membranacea, supra minute scaberula et asperula, subtus saepius densius ochraceo-scaberula et glandulis sessilibus conspersa, ad nervos puberula; capitula 8–9 cm. lata, pedunculis dense hirtellis; discus 13–15 mm. altus 25–35 mm. latus; phyllaria interiora 10–15 mm. longa, late ovalia vel subrotunda, apice rotundata, exterioribus late ovatis obtusis 8–11 mm. longis 5–8 mm. latis; radii 12–15 late elliptici, utrinque attenuati, apice acuminati, 3.5–4 cm. longi; achaenium 6 mm. longum 2.8–3 mm. latum, sparse adpresso-puberulum, apice densius puberulum.

A frutescent herb, 3–6 meters tall; stems light gray-brown, the old, ligneous, lower portions glabrous, 2–10 cm. in diameter; young stems and branches 6–8-ridged, sparsely to densely sordid-hirtellous; leaf blades ovate or broadly triangular-ovate in outline, acuminate to caudate, at base truncate or cordate, 2–4-angled on each side, the lobes short, toothed, and sometimes bearing secondary lobes, the terminal lobe longest and mostly tapering, the margins broadly mucronate-crenate, the larger main cauline leaves with a blade 10–22 cm. long and 8–22 cm. broad, the uppermost cauline leaves and those subtending the peduncles smaller, palmately 3–7-nerved, 3 or 5 of the main nerves prominent, thin, membranaceous, divaricately spreading or drooping (easily wilting), dull grass-green on the upper surface, slightly paler on the lower surface, minutely scaberulous and asperulous on the upper surface, usually more densely gray-buff-scaberulous and with resinous, sessile glands on the lower surface, especially puberulous on the main nerves of the lower surface, the hairs simple, those on the nerves and veinlets of the lower surface longer and looser than the ones on the remaining portion of the lower leaf surface, the hairs on the upper surface of two kinds: a stout, broad-based, curved, hispidulous hair, and a shorter, linear, weaker, straight, appressed type. Base of blade with a small, auriculate appendage at the junction with the petiole. Petiole exalate, 2–10 cm. long, densely buff-brown-hirtellous. Heads loosely and cymosely arranged, 3–6 at the ends of the branches, usually a single head terminating a peduncle, about 200-flowered, including the rays 8–9 cm. across. Peduncles densely hirtellous. Disk 1.3–1.5 cm. high, 2.5–3.5 cm. broad, slightly convex. Disk corollas black in the upper half, dull whitish in the lower half, 8 mm. long. Tube of the disk corolla 2.5–3.5 mm. long, 0.5–0.8 mm. broad, whitish, densely puberulous; corolla limb 3 mm. long, mostly black, sparsely glandular on the outer surface; corolla lobes black, 2.5–3 mm. long, 0.5 mm. broad, sparsely pilosulous and glandular with sessile glands, spreading-squarrose. Involucre 2-seriate, the inner series slightly graduated, 1–1.5 cm. high, the outermost involucral bracts broadly ovate, obtuse, 8–11 mm. long, 5–8 mm. broad, firmly membranaceous, densely appressed-puberulous on both surfaces, slightly scarious on the margins; inner series of bracts imbricate, scarious on the margins, thinner, more membranaceous, broadly oval or subrotund, rounded at the tip, the innermost ones the largest, 1.3–1.8 cm. long, 1–1.5 cm. broad, glabrous; rays 12–15, broadly elliptic, tapering at each end, acuminate at the apex, the ligule puberulous and gland-dotted with sessile glands on the back, 3.5–4 cm. long, 1–1.2 cm. broad in the broadest portion; pales conspicuous in fruit, greenish straw-color, the spinose-bristly pectinations 3–4 mm. long in fruit; pappus of disk flowers 2–3 mm. long, of the ray flowers 1.5–2 mm. long. Achene epappose, 6 mm. long, 2.8–3 mm. broad in the upper half, mottled dull brown and blackish, sparsely puberulous on most of surface with appressed hairs, densely puberulous around the top.—Guatemala: Dept. San Marcos: Thickets of ravine along stream, upper, south-facing, forested slopes of Volcán de Tajumulco, between Las Canojas and top of ridge, 7 miles from San Sebastián, alt. 3,300–3,900 meters, February 16, 1940 *Julian A. Steyermark* 35835 (type in Herb. Field Mus.). At base of waterfall in thickets along road between San Sebastián at km. 21 and km. 8, 8–18 miles northwest of San Marcos, alt. 2,700–3,800 meters, February 15, 1949, *Steyermark* 35773. Moist floor of barranco between town of Tajumulco and Loma Buena Vista, northwestern slopes of Volcán de Tajumulco, alt. 2,300–2,800 meters, February 28, 1940, *Steyermark* 36864. Shaded ravine, slopes of barrancos tributary to and bordering Río Vega, between San Rafael at northeast portion of Volcán de Tacaná and Guatemala-Mexico line, alt. 2,500–3,000 meters, February 21, 1940, *Steyermark* 36310. Sunny margin of stream, Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, February 20, 1940, *Steyermark* 36206.—Dept. Quezaltenango: Wet forest, Fuentes Georginas, western slopes of Volcán de Zunil, alt. 2,850 meters, March 4, 1939, *Standley* 67513, 67400, 67379. Wet thicket, Cumbre de Tuilacán, southwest of San Martín Chile Verde, alt. 2,400 meters, March 8, 1939, *Standley* 67812.

The local names given for this plant are Espina, in reference to the bristly fruiting pales, and Mac, the latter given by one of the Indians living in the village of Tajumulco.

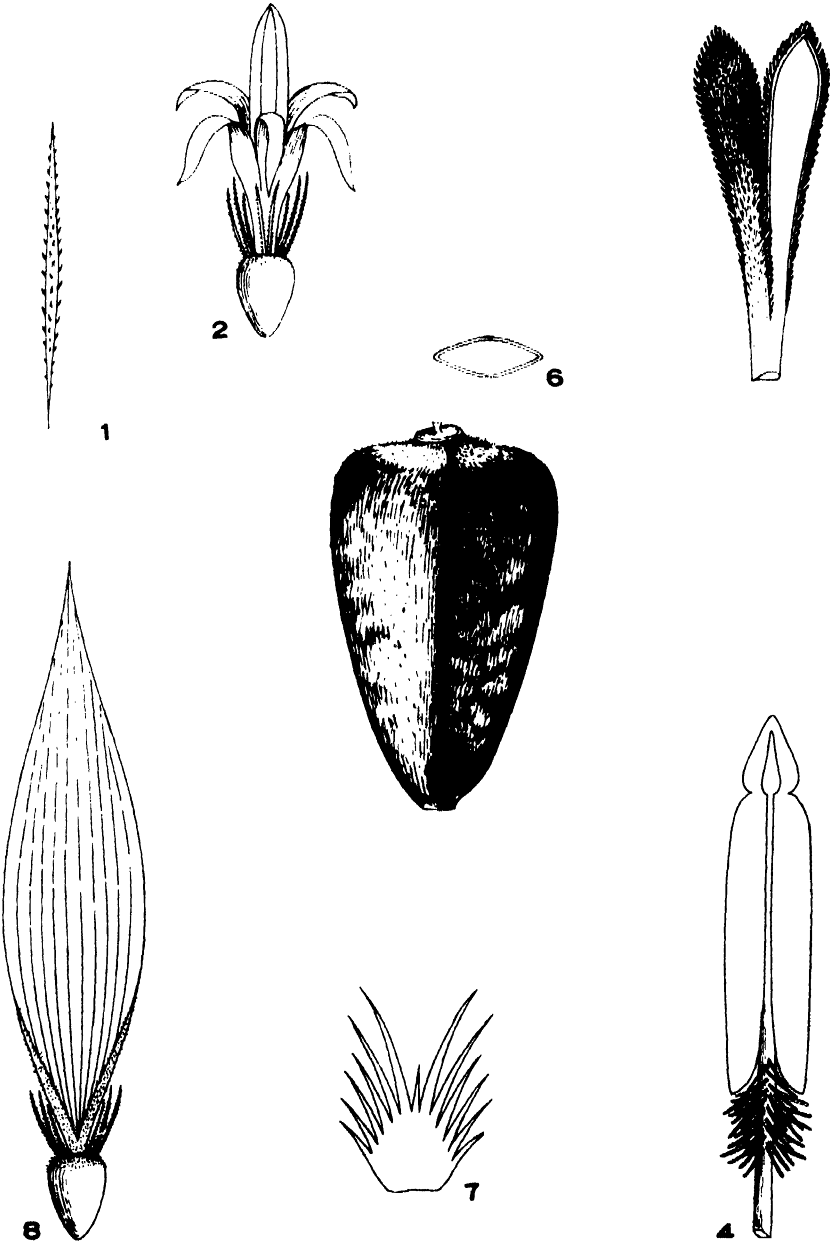

FIG. 2. Details of floral structure of *Rojasianthe superba:* 1. A single pappus awn; 2. Disk flower; 3. Style branches from a disk flower; 4. A single stamen detached from a disk flower; 5. Achene from a disk flower; 6. Cross-section of an achene; 7. Pale from receptacle; 8. Ray flower.

The distribution of this plant is confined to the higher, cool, moist barrancos between 2,400 and 3,300 meters in the mountains of extreme southwestern Guatemala. Thus far the species has been collected from the volcanoes of Zunil, Tajumulco, and Tacaná. It evidently occurs in adjacent Mexico on Volcán de Tacaná in the State of Chiapas, because the junior author collected it along the Guatemala-Mexico line on Volcán de Tacaná. It was observed to be common in all the moist, shaded ravines and barrancos, always along streams, of Volcán de Tacaná and Volcán de Tajumulco, in the latter area being found on all sides of the volcano. The time of flowering of the species seems to be confined to the latter portion of the dry season, in late February and March.

Rumfordia penninervis Blake, Brittonia 2: 343. 1937.—The type was obtained by Skutch in western Guatemala along the road between Quezaltenango and Colomba, Department of Quezaltenango. An additional collection has been made in the Department of San Marcos: Upper, south-facing, forested slopes of Volcán de Tajumulco, between Las Canojas and top of ridge, 7 miles from San Sebastián, alt. 3,300–3,900 meters, *Steyermark* 35843. Local name Té. A shrub of 3 meters; rays yellow, the disk dull yellow.

Schkuhria viscosissima Standl. & Steyerm., sp. nov.—Herba annua erecta subfastigiato-ramosa ut videtur 30–45 cm. alta, caulibus gracilibus striatis ubique dense pilis longiusculis patulis apice glanduliferis pilosis; folia bene evoluta non visa, pinnato-dissecta, segmentis scaberulis subrevolutis; capitula viridi-alba numerosa in cymulas laxas paniculatas disposita, pedicellis plerumque 5–8 mm. longis glanduloso-hirtellis; phyllaria 5–6 oblongo-obovata apice obtusissima vel rotundata 4.5–5 mm. longa dorso sparse adpresso-hispidula, marginibus pallidis hyalinis; achaenia pauca anguste turbinata 3 mm. longa nigrescentia dense hispidula; pappi squamae 8 obovato-orbiculares fere 1 mm. longae apice rotundatae albidae, basi subincrassatae; radii nulli.—Guatemala: Dry thicket, near Sacapulas, Dept. Quiché, alt. 1,040–1,240 meters, January 12–14, 1939, *Paul C. Standley* 62513 (type in Herb. Field Mus.).

The single available specimen is in poor condition, being in advanced fruiting state, but it is clearly of this generic relationship. The Guatemalan plant here described is a close relative of *Schkuhria neomexicana* Gray, which Rydberg (N. Amer. Fl. 34: 46. 1914) referred to a monotypic genus, *Cephalobembix*. *Schkuhria viscosissima* is noteworthy for its exceedingly abundant and viscid pubescence, unlike that of most other members of the genus.

Schkuhria guatemalensis (Rydb.) Standl. & Steyerm., comb. nov. *Tetracarpum guatemalense* Rydb. N. Amer. Fl. 34: 45. 1914.—Since the generic name *Schkuhria* is conserved, this transfer becomes necessary.

Simsia lagascaeformis DC. Prodr. 5: 577. 1836.—The species ranges widely in Mexico, and by Blake in his account of the genus (Proc. Amer. Acad. 49: 382. 1913) is reported only from that country. The following collections attest its occurrence in Guatemala: Dept. Sacatepéquez, near Antigua, in hedges or cafetales, a branched herb 1–2.5 meters high, common, the involucre black-purple, alt. 1,500–1,600 meters, *Standley* 58037, 60374. Dept. San Marcos, along Río Tacaná, near San Antonio, alt. 2,700 meters, *Standley* 66164.

Verbesina agricolarum Standl. & Steyerm., sp. nov.—Ut videtur frutex ramosus, caulibus subgracilibus viridescentibus striatis resinoso-puberulis et sparsius pilis albidis patentibus pilosis, internodiis brevibus; folia alterna inter minora petiolata herbacea, petiolo usque 2.5 cm. longo saepe fere ad basin alato, basi non dilatato, foliis supremis tantum sessilibus; lamina late rhombico-ovata usque oblongo-ovata vulgo 5.5–12 cm. longa atque 2.5–8 cm. lata acuta vel breviter acuminata, inferne cuneato-angustata et prope basin abrupte in petiolum contracta, arcte dentata, supra viridis dense scabra, pilis basi bulboso-incrassatis, tactu asperrima, subtus griseo-viridis, ubique sat dense pilis mollibus albidis aliquanto intertextis pilosa, nervis lateralibus utroque latere ca. 8; inflorescentia terminalis paniculata corymbiformis 3.5–8 cm. lata, ramis exalatis dense pilis albidis patulis pilosis, pedicellis gracilibus usque 8 mm. longis, bracteis parvis lineari-subulatis, capitulis paucis vel numerosis radiis exclusis ca. 5 mm. longis et 3 mm. latis luteis; phyllaria 2–3-seriata inaequalia viridescentia lineari-oblonga 3.5–4 mm. longa sparse pilis brevibus villoso-pilosula, exteriora obtusa, interiora acuta vel acutiuscula; radii ca. 8 laete lutei ovales vel late oblongi ca. 3.5 mm. longi patuli; flores disci numerosi, paleis acutis vel acutiusculis; corollae ca. 2.5 mm. longae.—Guatemala: Finca La Alameda, Dept. Chimaltenango, September 21, 1937, *J. R. Johnston* 1026 (type in Herb. Field Mus.); October 17, 1936, *Johnston* 120; July 30, 1937, *Johnston* 913.

The specimens are all in flower and no achenes are available. Superficially the specimens resemble *V. guatemalensis* Rob. & Greenm., but that has large, white heads. *V. agricolarum* belongs to the Section *Saubinetia*, and is perhaps related to *V. perymenioides* Sch. Bip. of Mexico, but that has larger heads and differs in almost all details. Finca La Alameda is the seat of the National School of Agriculture of Guatemala, a fact to which the specific name assigned to this plant refers.

Verbesina hypoglauca Schultz Bip. ex Klatt, Leopoldina 23: 144. 1887.—Previously the plant has been known from the states of Oaxaca and Puebla, Mexico, where it has been collected but few times. It is plentiful at rather high elevations on at least two of the Guatemalan volcanoes: Dept. Quezaltenango, slopes of Volcán de Santa María, above Palojunoj, at about 3,300 meters, in forest, March, 1939, *Standley* 67657, 67597. Dept. Chimaltenango, slopes of Volcán de Acatenango, above Las Calderas, at upper limit of *Chiranthodendron* forest, alt. 2,700 meters, common, January, 1939, *Standley* 61832. A shrub of 2–3 meters with yellow, showy heads. Among Guatemalan species this is easily recognized by the pale, silvery-silky under surface of the leaves.

Verbesina scabriuscula Blake, Contr. Gray Herb. 52: 54. 1917.—The type was collected at San Felipe, Dept. Retalhuleu, Guatemala. The following collections from the same country agree perfectly with the original description, in spite of the fact that all were collected at substantially higher elevations than the type: Villa Guadalupe, alt. 1,480 meters, in cafetal, *J.G. Salas* 1431; a small shrub; flowers white, visited by bees; odor very disagreeable. Finca La Alameda, Dept. Chimaltenango, *J. R. Johnston* 256. Dept. Jalapa, La Laguna, base of Volcán de Jumay, 1 mile north of Jalapa, alt. 1,400–1,600 meters, oak forest, *Steyermark* 32293; a shrub of 3 meters. Near Finca La Alameda, Dept. Chimaltenango, alt. 1,830 meters, pine forest, *Standley* 59137; a shrub of 2.5 meters. Cumbre de Tuilacán, southwest of San Martín Chile Verde, Dept. Quezaltenango, alt. 2,400 meters, in wet thicket, *Standley* 67791. Finca El Hato, northeast of Antigua, Dept. Sacatepéquez, alt. 1,950–2,040 meters, brushy slope, *Standley* 61201. Cuesta de las Cañas, above Antigua, alt. 1,950 meters, brushy slope, *Standley* 58838; a simple shrub of 2–4.5 meters, common. Above Las Calderas, Dept. Sacatepéquez, alt. 1,800 meters, moist barranco, *Standley* 59985. Known by the names Toquillo and Suquinay blanco. In December the shrub is a beautiful and showy one, attracting attention because of its large, flat-topped panicles of pure white heads, and on account of its huge, merely dentate leaves as much as 50 cm. or more in length.

Verbesina Steyermarkii Standl. sp. nov.—Frutex vel arbor usque 6 m. alta, ramis ochraceis vel pallide brunneis striatis

lenticellatis primo sericeo-pilosis, cito glabratis, exalatis, internodiis brevibus; folia modica vel parva alterna petiolata membranacea, petiolo brevi et fere ad basin alato, parte nuda gracili usque 1.5 cm. longa; lamina anguste lanceolata usque lanceolata vel cuneato-oblanceolata 9–25 cm. longa 2.5–9.5 cm. lata acuminata vel saepius longe angusteque attenuato-acuminata, basin versus longe anguste attenuata, margine adpresse crenato-serrato vel in foliis majoribus grosse serrato, supra in sicco viridis fere glabra sed primo sparse piloso-scabra, plus minusve pustulato-punctata, subtus fere concolor vel grisea, primo sparse pilis pallidis laxis mollibus induta sed in statu adulto fere omnino glabra, nervis lateralibus utroque latere ca. 7; inflorescentia terminalis paniculata corymbiformis 10–16 cm. lata multicapitata, ramis nudis densiuscule sericeo-pilosis, pedicellis gracilibus sed rigidis usque 15 mm. longis, bracteis parvis lanceolatis adpressis; capitula radiis exclusis ca. 7 mm. longa et 4 mm. lata lutea dense aggregata; phyllaria arcte adpressa lutescentia 2–3-seriata inaequalia oblonga vel exteriora ovato-oblonga ciliata dorso glabra vel glabrata obtusa vel rotundata; radii ca. 8 late oblongi ca. 3 mm. longi; flores disci numerosi, paleis angustis albidis hyalinis apiculatis, corollis 3 mm. longis; achaenia anguste oblongo-cuneata glabra nigra usque 3.5 mm. longa, interiora exalata, exteriora late alata et usque 4 mm. lata, alis pallidis tenuibus corpore achaenii latioribus, aristis pappi erectis usque 2 mm. longis; capitula fructifera quam florifera majora ca. 7 mm. longa et fere 1 cm. lata.—Guatemala: Dept. Chiquimula, between Chiquimula and La Laguna, alt. 500–1,000 meters, grassy places on top of rim rock, October 27, 1939, *Julian A. Steyermark* 30698 (type in Herb. Field Mus.). Dept. Jalapa, Volcán de Imay, alt. 1,500 meters, January, 1908, *Kellerman* 8077, 7982. Jalapa, Dept. Jalapa, alt. 1,050 meters, January, 1908, *Kellerman* 7850.

Like *V. agricolarum*, this is a member of Section *Saubinetia*, and it resembles that species in the size and appearance of its heads, and in the shape of its leaves. The almost glabrous leaves, smooth to the touch on the upper surface, rather than very rough, distinguish *V. Steyermarkii* at once from *V. agricolarum*.

STUDIES OF
CENTRAL AMERICAN PLANTS—II

BY

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STUDIES OF CENTRAL ~~AMERICAN~~ PLANTS—II

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The present paper, like the lately published first one of the series, is devoted principally to reports upon new or otherwise noteworthy plants of Guatemala, obtained by the two recent Field Museum expeditions to that country. In addition, there are included descriptions of numerous new species and notes regarding rare plants from collections made recently in the Republic of Panama.

CYPERACEAE

Mapania sylvatica Aubl. Pl. Guian. 47. *pl. 17.* 1775.—This sedge must be a rather rare plant; at least it is so in herbaria, for three of the largest herbaria of the United States have been found to possess in all only a single sheet from South America. This is one from Colombia, in the herbarium of the New York Botanical Garden: Vicinity of Barranca Bermeja, Magdalena Valley, between Sogamoso and Colorado rivers, alt. 100–500 meters, July, 1934, *Oscar Haught* 1327; a fairly common herb, growing in rather wet soil in shade. Mrs. R. A. Terry's recent explorations in Darién, Panama have resulted in two collections that represent the genus and this species, at least so far as all the available specimens and data indicate: Rain forest, Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March 12, 1940, *M. E. & R. A. Terry* 1515; plants 30–60 cm. high. East slope, Cana–Cuasi trail, Real District, alt. 1,650 meters, March 16, 1940, No. 1596. The genus is new for North America. The plant is noteworthy among Cyperaceae for its peculiar habit, the naked culms bearing at the apex three large, broad bracts or leaves about 13 cm. long and 4 cm. wide. The abundant, crowded achenes also are unusual, being almost spherical, black, and shining, and thus resembling large shot.

RAPATEACEAE

Stegolepis Allenii Steyermark, sp. nov.—Herba acaulis epiphytica; rhizomate crasso elongato 10 cm. longo 1.5 cm. crasso; foliis distichis iridaceis basi valde angustatis falcatis subcoriaceis multinerviis 30–40 cm. longis, 1.5–2.8 cm. latis, apice acutiusculis, costa media prominente; vaginis complicatis late triangulari-ovatis apicem versus sensim angustatis coriaceis, marginibus tenui-mem-

branaceis scariosis dilatatis fuscis, 10–15 cm. longis, 2.5–3.5 cm. latis, medio latissimis; scapis elongatis ca. 5-costatis teretibus tenuissimis, 0.5–0.6 mm. diam., apice dilatatis, 2–2.5 mm. latis, stramineis, 30–50 cm. longis, costis obtusis; floribus 2 sessilibus, involucro nullo, fusiformibus 1–1.2 cm. longis anthesi 3.5–5 mm. latis, in fructu 6 mm. latis; bracteis plurimis ca. 14–16 glabris adpressis induratis, omnibus acutis, infimis triangularibus vel ovatis, 1–3 mm. longis, ceteris ovatis vel ovato-lanceolatis 6–7 mm. longis, prope basin ca. 2–3 mm. latis; sepalis 3 ovato-lanceolatis 7–8 mm. longis, bracteas paullo superantibus, brunneis acutis firme chartaceis; antheris 6 linearibus tetragonis 4-locularibus fuscis apice unilocellatis poro unico introrso dehiscentibus, filamentis inferne corollae adnatis 3.5–3.8 mm. longis; ovario triloculari, loculis 7–8-ovulatis, ovulis matrice mucoso circundatis; capsula loculicide dehiscente nitente fulva 9 mm. longa.—Panama: Prov. Coclé: Epiphytic, growing with orchids and ferns in tops of trees 10 meters tall, hills north of El Valle de Antón, alt. 1,000 meters, June 23, 1940, *Paul H. Allen* 2153 (type in Herb. Field Mus.).

The genus *Stegolepis* has been known previously only from South America, in Venezuela and British and French Guiana. All the other species are reported to grow in swamps or moist or boggy spots on the slopes and summits of mountain areas. It is, therefore, a surprise to find that this new species of Panama should have been found as an epiphyte growing "in the tops of trees as tall as 10 meters," according to the notes of the collector.

This species is related to *S. linearis* Gleason and *S. pauciflora* Gleason in possessing 2-flowered heads, but is amply distinct from both species in several characters. From *S. linearis* it differs in its very much longer and broader leaves, more slender scapes, smaller flowers with fewer bracts, and more numerous ovules, while from *S. pauciflora* it may be separated easily chiefly by its leaf sheaths, which are narrowed above and tapering gradually to the blade and not auricled, instead of being abruptly rounded to the summit and auricled, and by its more slender scapes. The family Rapateaceae, rather sparsely represented in South America, chiefly in the Guianas and the Amazon Valley, has not been recorded previously from North America.

PALMAE

Chamaedorea Terryorum Standl., sp. nov.—Planta nana acaulis 30–40 cm. alta, vel ut dicitur usque 75 cm.; folia parva membranacea, petiolo 11–25 cm. longo gracili; vagina angusta oblique aperta extus dense striato-costata; lamina 21–30 cm. longa 9–15 cm. lata simplex obovato-cuneata, rhachi 12–16 cm. longa, basi acuta, apice profunde excisa, segmentis apice longe angusteque acuminatis, supra in sicco olivacea, subtus vix pallidior, nervis primariis utroque latere ca. 14 tenerrimis subtus prominentibus, nervis tertiariis sat densis et numerosis subtus prominulis; spadices masculi plures longipedunculati cum pedunculo ca. 18 cm. longi, ramis 16 vel ultra gracillimis late patentibus vel subrecurvis usque 6 cm. longis flexuosis, floribus remotis sessilibus sed non immersis, rhachi gracili recta, spathis anguste tubularibus 3 mm. latis; calyx tenuis late cupularis 1.5 mm. latus fere 1 mm. altus, obscure trilobus; petala valvata oblongo-obovata 3 mm. longa in sicco fusca, apice late obtusa vel fere rotundata; stamina petalis duplo breviora.—Panama: Cana–Cuasi trail, Chepigana District, Prov. Darién, alt. 600 meters, March 9, 1940, *M. E. & R. A. Terry* 1452 (type in Herb. Field Mus.).

In general appearance the plant suggests *Chamaedorea Ernesti-Augusti* Wendl., of Mexico and British Honduras, but probably it is not closely related to that, which Burret refers to the genus *Eleutheropetalum*. *C. Terryorum* is one of the smallest plants of the genus, and is notable also for its simple leaves and dwarf, much branched staminate spadices, whose branches are more slender than those of any other *Chamaedorea* I have seen.

LILIACEAE

Anthericum panamense Standl., sp. nov.—Herba erecta glabra ca. 30 cm. alta, radicibus numerosis longis paullo carnosis pallidis; folia magna lataque numerosa tenuia plerumque 22–35 cm. longa et 13–18 mm. lata in sicco laete viridia apicem versus longe sensimque attenuata, basin versus sensim angustata, ima basi in vaginam latam pallidam dilatata, glabra, ca. 16-nervia, nervis tenerrimis prominulis; inflorescentia foliis subaequalis vel interdum paullo longior fere simplex et racemiformis vel ramis 1–2 brevibus aucta, scapo inferne nudo, supra bracteis paucis lineari-lanceolatis viridibus usque 4.5 cm. longis onusto, parte florifera usque 10 cm. longa et ultra dense vel laxe multiflora, pedicellis gracillimis 4–8 mm. longis bene infra medium geniculatis adscendentibus solitariis vel pauci-fasciculatis; perianthium album, segmentis oblongo-linearibus 6–7 mm. longis obscure 3-nerviis persistentibus; filamenta gracillima 1.5–2 mm. longa glabra, antheris oblongis 1.2–1.5 mm. longis; stylus gracillimus fere 3 mm. longus; capsula subglobosa viridis ca. 4 mm.

alta et aequilata subprofunde triloba, apice depressa; semina pauca nigra angulata ca. 1.5 mm. diam. dense minutissime punctata.—Panama: Hills north of El Valle de Antón, Prov. Coclé, alt. 1,000 meters, July 14, 1940, *Paul H. Allen* 2195 (type in Herb. Field Mus.).

Among Central American species of *Anthericum* this is isolated by its large, very wide, and thin leaves, and by the small, white, rather than yellow, flowers, with extremely small anthers.

ZINGIBERACEAE

Renealmia foliifera Standl., sp. nov.—Herba erecta ca. metralis; folia pauca radicalia longipetiolata, petiolo fere ad apicem vaginato, vagina dense striata; lamina magna 12 cm. lata et ultra, apice acuminata vel rotundata et breviter abrupteque acuminata, basi acuta, glabra, arcte nervosa; pedunculus petiolis aequilongus gracilis prope apicem folio 1 ceteris conformi et aequimagno onustus; panicula spiciformis ca. 13 cm. longa erecta, rhachi crassa sparse pilosula vel fere glabra; bracteae oblongae ca. 7-nerviae apice obtusae vel rotundatae viridescentes ca. 2 cm. longae glabrae, bracteolis conformibus sed brevioribus; flores ca. 5 mm. longe pedicellati in concinnos paucifloros brevissime pedunculatos dispositi, pedicellis dense hirtellis; ovarium dense hirtellum late obovoideum 3.5 mm. longum basi obtusum; calyx ca. 7 mm. longus anguste campanulatus irregulare trilobus, lobis brevibus apice rotundatis.—Panama: Rain forest, crest of Cana-Cuasi trail, Chepigana District, Prov. Darién, alt. 1,650 meters, March 15, 1940, *M.E. & R. A. Terry* 1591 (type in Herb. Field Mus.).

The flowers are described as orange. The material is not too well preserved, particularly as regards the leaves. The plant seems to represent a species different from all those reported previously from southern Central America, although the inflorescence in general appearance is much like that of *R. concinna* Standl., of the same general region. The inflorescence arises from the base of the plant with the leaves, and is distinguished by the greatly elongate peduncle and especially by the large leaf borne from the upper part of the peduncle.

ULMACEAE

Phyllostylon rhamnoides (Poisson) Taub. Oesterr. Bot. Zeitschr. 40: 409. 1890. *Samaroceltis rhamnoides* Poisson, Journ. de Bot. 1: 256. 1887.—This tree, which furnishes a rather valuable wood, has been recorded in continental North America from the Mexican states of Tamaulipas, San Luis Potosí, Hidalgo, and Yuca-

tan, besides occurring in Cuba and Hispaniola, and in some of the drier regions of Brazil and adjacent countries. It has been found recently in Central America: Guatemala: Dept. Chiquimula: Rocky (igneous) outcrops along gorge of Río Chiquimula, between Santa Bárbara and Petapilla, 4–6 miles north of Chiquimula, alt. 350–420 meters, *Steyermark* 30237; a shrub of 3 meters. The specimens are sterile, but clearly referable here.

ARISTOLOCHIACEAE

Aristolochia Steyermarkii Standl., sp. nov.—Arbor 6-metralis, ramis teretibus gracilibus brunnescenti-fuscis glabris nodosis, internodiis plerumque 2–4.5 cm. longis; folia majuscula breviter petiolata membranacea, petiolo gracili 1–1.5 cm. longo glabro; lamina anguste oblonga vel lanceolato-oblonga vulgo 15–23 cm. longa et 4–6 cm. lata breviter vel longiuscule acuminata, acumine angusto, basi paullo inaequali obtusa, interdum subcontracta, glabra, supra in sicco fuscescenti-viridis sublucida, costa nervisque ferè planis, subtus pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 7 teneris prominentibus arcuatis angulo lato vel latiusculo adscendentibus, venis prominulis laxissime reticulatis; flores axillares solitarii, pedunculo fructifero gracili 2–3 cm. longo glabro; capsula angusta glabra lucida, valvis 6 post dehiscentiam valde recurvis 4–4.5 cm. longis ca. 6 mm. latis, seminibus ut videtur numerosis.—Guatemala: Dept. Quezaltenango: Along Quebrada San Gerónimo, Finca Pireneos, lower south-facing slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–2,000 meters, January 1–2, 1940, *Julian A. Steyermark* 33455 (type in Herb. Field Mus.).

The most closely related species is *Aristolochia arborea* Linden, which has abundant although very short pubescence. In that species, too, the flowers are borne in small panicles on naked branches below the leaves.

POLYGONACEAE

Polygonum aviculare L. Sp. Pl. 362. 1753.—While Britton and Brown in the *Illustrated Flora of the Northern States and Canada* give the range of this species as "common almost throughout North America, Asia, and Europe," their statement is certainly not true for a good many wide areas in North America. In Mexico the plant, doubtless introduced from Europe, is either rare or else not collected, and it has not been reported for Central America, except for a single collection from Costa Rica. The following collections of the common knotgrass are therefore worth placing on record: Mexico: Chuichupa, Chihuahua, August, 1937, *Harde LeSueur* 1313. El Rosario, Distrito Federal, August, 1936, *L. H. MacDaniels* 626. Maltrata, Veracruz, May, 1937, *Matuda* S25.—Guatemala: Dept. Guatemala: On sandbar, erect, rare, large arroyo south of Guatemala on road to Amatitlán, alt. 1,380 meters, *Standley* 62846.—Dept. Chimaltenango: Patzicía, in waste ground, *Standley* 61477; procumbent; locally abundant.—Dept. Quezaltenango: Olintepeque, alt. 2,415 meters, in edge of street, *Standley* 66003; called locally Tabaco. Near Quezaltenango, roadside, alt. 2,300 meters, *Standley* 66427; plants erect or prostrate, common. On sand flat, eastern side of Río Samalá opposite Santa María de Jesús, alt. 1,500 meters, *Steyermark* 35068; plants prostrate except for the central stem, which is erect; flowers pink or rosy; leaves grayish blue-green.—Costa Rica: Tierra Blanca, April, 1935, *J. M. Orozco* 302. In Costa Rica the plant probably is of recent introduction, perhaps with grass seed. In Guatemala, like so many other European weeds, it has the appearance of having been long established, and has become a common weed in many localities of the Department of Quezaltenango.

Polygonum longiocreatum Bartlett, Proc. Amer. Acad. 43: 51. 1907.—The species was based on a single collection from Gualán, Dept. Zacapa, Guatemala, *C. C. Deam* 374. It has been noted from the vicinity of Tela, Dept. Atlántida, Honduras, and several recent Guatemalan collections extend widely its previously known range: Dept. Zacapa: Near Zacapa, alt. 225 meters, sandy river bed, *Standley* 72091; plants erect, the flowers deep pink.—Dept. Chiquimula: Margin of rivulet, in mud, valley of Río Chiquimula, 1.5 miles northeast of Chiquimula, alt. 400 meters, *Steyermark* 30127; inflorescence drooping-arching; flowers pink-rose and white.—Dept. San Marcos: Edge of stream, Río Cabús, near Malacatán, alt. 300 meters, *Standley* 68878; plants erect, 60 cm. high; flowers pale pink.

AMARANTHACEAE

Alternanthera laguroides Standl. in Standl. & Calderón, Lista Prel. Pl. Salvador 74. 1925. *Achyranthes laguroides* Standl. Contr. U. S. Nat. Herb. 18: 90. 1916.—In *North American Flora* (21: 143. 1917) this species is reported only from Costa Rica, whence it was described, but it has since been recorded for Salvador. Several collections now available show that it ranges somewhat farther north and south: Guatemala: Dept. Guatemala, in 1940, *Ignacio Aguilar* 454.—Panama: Prov. Bocas del Toro: Lincoln Creek, in 1924, *V. C.*

Dunlap 426; a vine. Banks of Changuinola River, March, 1924, climbing, *Dunlap* 515.

CARYOPHYLLACEAE

Cerastium guatemalense Standl. Bot. Ser. Field Mus. 17: 244. 1937.—The type is *J. R. Johnston* 816 from Volcán de Agua, Dept. Sacatepéquez, Guatemala. Several additional collections have been made recently on the Guatemalan volcanoes: Dept. Sacatepéquez: Pine forest, scarce, slopes of Volcán de Agua above Santa María de Jesús, alt. 2,250–3,000 meters, *Standley* 65268.—Dept. Chimaltenango: Slopes of Volcán de Acatenango, above Las Calderas, alt. 2,700–2,900 meters, in open pine forest with dense tussock grass, *Standley* 61872, 61893; common in this region.—Dept. Quezaltenango: Moist pine slopes well up toward the summit of Volcán de Santa María, alt. 4,000 meters, *Steyermark* 34153.—Dept. San Marcos: Dry pine forest, between San Sebastián and summit of Volcán de Tajumulco, alt. 3,800–4,600 meters, *Steyermark* 35517.

Spergula arvensis L. Sp. Pl. 440. 1753.—While this European plant has becone established as a weed in various parts of the United States and Canada, it has not, so far as we find, been reported from Central America. Two collections are available from Guatemala: Dept. Quezaltenango: Cerro La Pedrera, south of Quezaltenango, alt. 2,400 meters, *Standley* 66463; abundant in an old field. Along eastern side of Río Samalá, opposite Santa María de Jesús, on sand flat, alt. 1,500 meters, *Steyermark* 35058. The plant is thoroughly established in the Department of Quezaltenango, and plentiful in some localities.

MAGNOLIACEAE

Magnolia Allenii Standl., sp. nov.—Arbor 30-metralis, trunco ca. 1 m. diam., ubique glabra vel glabrata, ramis crassis subteretibus vel obtuse subangulatis, junioribus ochraceis vel fusco-ochraceis, internodiis brevibus; stipulae a petiolo liberae 1.7–2.5 cm. longae extus minute subtuberculatae caducae; folia magna persistentia petiolata coriacea, petiolo crasso 2.5–5 cm. longo supra plano, subtus rotundo-convexo; lamina elliptico-ovata usque late elliptica 13–26 cm. longa atque 8.5–15 cm. lata vel ultra, apice obtusa vel rotundata, basi obtusa usque late rotundata et saepe breviter subito contracta et ad petiolum subdecurrens, interdum apicem versus paullo angustata, sed saepius medio latissima, supra in sicco griseo-brunnescens fere opaca, costa nervisque plus minusve prominentibus, venis prominentibus et arcte reticulatis, subtus fere concolor lucida, costa

solemniter elevata, nervis lateralibus utroque latere ca. 11 prominentibus gracilibus angulo semirecto vel latiore adscendentibus subarcuatis irregularibus prope marginem irregulare conjunctis, venis prominentibus arcte reticulatis; pedunculi crassissimi ca. 4.5 cm. longi 5-annulati, alabastro ante anthesin bracteis 2 connatis 3.5 cm. longis induratis vel in vivo carnosis incluso, bracteis glabris in sicco fuscoferrugineis; sepala exteriora ca. 4 cm. longa et aequilata in sicco indurata crassaque; carpella fructus juvenilis ca. 25 glabra.—Panama: Hills north of El Valle de Antón, Prov. Coclé, alt. 1,000 meters, July 14, 1940, *Paul H. Allen* 2200 (type in Herb. Field Mus.).

From Central America three other species of *Magnolia* have been described. The only one of these known from Panama is the recently described *M. sororum* Seibert (Ann. Mo. Bot. Gard. 25: 828. 1928) of Chiriquí, which differs in its abundant pubescence, very acute, much smaller leaves, and more numerous carpels. *Magnolia Allenii* appears to be an unusually well marked species, particularly notable for the petioles, considerably longer than those of other Central American species, and conspicuously flattened on the upper side, a character I have not observed in any other tropical American species. Mr. Allen supplies the following notes: A tree to 30 meters in height, tall, very straight, and handsome; bark gray; usual trunk diameter about 1 meter just above the buttresses, nearly 15 meters to the first branches; flowers white, fleshy.

MONIMIACEAE

Mollinedia darienensis Standl., sp. nov.—Frutex 1–2.5 m. altus, ramis gracilibus glabris in sicco fuscescentibus, internodiis brevibus rimosis; folia modica breviter petiolata chartacea, petiolo ca. 1 cm. longo glabro vel glabrato; lamina elliptico-oblonga vel lanceolato-oblonga 14–16 cm. longa 4.5–6 cm. lata subabrupte longiuscule acuminata, basi acuta, supra medium remote adpresso-serrata, serraturis utroque latere ca. 7, supra in sicco fuscescens sublucida glabra, costa nervisque non elevatis, subtus paullo pallidior brunnescens, primo ut videtur sparse sericea sed cito glabrata, in statu adulto fere omnino glabra, costa tenera prominente, nervis lateralibus utroque latere ca. 7 obliquis angulo lato adscendentibus teneris subarcuatis, venis prominulis laxe reticulatis; inflorescentia terminalis sessilis breviter racemosa ut videtur 3–4-flora, pedicellis fructiferis incrassatis 1–1.7 cm. longis glabratis; receptaculum in statu fructifero ca. 1 cm. latum; carpella pauca sessilia ellipsoidea basi et apice rotundata ca. 1.5 cm. longa et 1 cm. lata laevia.—Panama: Cana-

Cuasi trail, Chepigana District, Prov. Darién, alt. 600 meters, March 10, 1940, *M. E. & R. A. Terry* 1456 (type in Herb. Field Mus.).

CRUCIFERAE

Draba volcanica Benth. Pl. Hartweg. 82. 1841.—The type was found by one of the pioneer collectors of Guatemalan plants, Hartweg, in the crater of Volcán de Agua. Mexican material has been referred to the species, but in view of the critical nature of most *Draba* species, its identity is somewhat doubtful. Several recent collections of the species have been made in Guatemala and adjacent Chiapas, where the plant is confined to the limited alpine areas on the tops of the higher volcanoes: Mexico: Volcán de Tacaná, Chiapas, alt. 4,000 meters, *Matuda* in August, 1938.—Guatemala: Dept. San Marcos: Summit of Volcán de Tajumulco, in shade, crevices of north-facing, rocky summit of the dome, alt. 4,600 meters, *Steyermark* 35538. Between San Sebastián and summit of Volcán de Tajumulco, common from top of slope in pine woods to summit of the rocky, alpine dome, alt. 3,800–4,600 meters, *Steyermark* 35521.—Dept. Quezaltenango: Volcán de Santa María, among rocks on or near the summit, alt. 3,768 meters, *Standley* 67730; *Skutch* 850, the flowers yellow.—Dept. Sacatepéquez: Crater of Volcán de Agua, July, 1937, *J. R. Johnston* 801.

CAPPARIDACEAE

Capparis quiriguensis Standl. Proc. Biol. Soc. Wash. 37: 52. 1924.—The type was found in a wooded swamp near Quiriguá, Guatemala, *Standley* 24048. Apparently the plant does not range widely, nor is it common, for at present it is known only from the Department of Izabal: Near Quiriguá, in swamp forest, alt. 75 meters, *Standley* 72290, 72251; a shrub or tree of 3–6 meters; stamens white or creamy white. Swampy jungle in valley of tributary of Río San Francisco del Mar, two miles northeast of Hopi, 12 miles east of Entre Ríos, near sea level, *Steyermark* 39769; a shrub; leaves subcoriaceous, dark green above, pale bluish green beneath. Valley of Río Motagua between Los Amates and Quiriguá, alt. 80 meters, *Steyermark* 38332; a tree of 6 meters.

Capparis Tuerckheimii Donn. Smith, Bot. Gaz. 46: 109. 1908.—Originally collected at Panzal, Baja Verapaz, Guatemala, *Tuerckheim* II.1746, the species must be rare in Guatemala, and no recent collections of it from that country are available. It has been collected several times in Honduras, however, and may now be placed on record from the State of Tabasco, Mexico, the determinations by Dr. C. L. Lundell: Mercedes, Balancán, *Matuda* 3009; a shrub of 2–3 meters; flowers white. Reforma, Balancán, *Matuda* 3185; a shrub.

SAXIFRAGACEAE

Phyllonoma cacuminis Standl. & Steyerm., sp. nov.—Arbor humilis omnino glabra, ramis gracillimis pallidis in sicco subangulatis et striatis flexuosis, internodiis brevibus; folia breviter petiolata subcoriacea, petiolo gracili 6–8 mm. longo; lamina anguste oblongo-lanceolata 5–8 cm. longa 1.3–2.2 cm. lata, subabrupte longe angusteque caudato-acuminata, acumine usque 1.5 cm. longo saepe falcato, basi acuta, supra in sicco griseo-viridis, costa impressa, nervis venisque prominulis, sublucida, subtus fere concolor, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 13 tenerrimis prominentibus angulo recto vel fere recto divergentibus, prope marginem arcuato-junctis, venulis prominulis arcte reticulatis, margine integro vel remote minuteque serrulato; inflorescentia e pagina superiore laminae basi acuminis nascens parva pauciflora laxa, ramis pedicellisque incrassatis, pedicellis 1 mm. longis vel paullo ultra; hypanthium obovoideum 1 mm. longum; sepala triangulari-ovata obtusa 0.8 mm. longa reflexa.—Guatemala: Dept. Zacapa: Cloud forest in ravine bordering Quebrada Alejandria, summit of Sierra de las Minas, vicinity of Finca Alejandria, alt. 2,500 meters, October 13, 1939, *Julian A. Steyermark* 29870 (type in Herb. Field Mus.).

The species of *Phyllonoma*, a genus remarkable because its small inflorescences arise from the upper leaf surface near the apex of the blade, are all much alike and, as generally treated, separated by "feeble" characters. The present one is no more distinct than the rest, but it does seem to differ decidedly from *P. laticuspis* (Turcz.) Engler, the only other species of northern Central America, in its narrow, entire or only remotely and minutely serrulate leaves, which are thicker than in *P. laticuspis*.

Phyllonoma laticuspis (Turcz.) Engler in Engl. & Prantl, Pflanzenfam. 3, Abt. 2a: 87. 1890. *Dulongia laticuspis* Turcz. Bull. Soc. Nat. Moscou 31, pt. 1: 454. 1858.—In *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 313. 1922) this tree was reported to range from Durango to Chiapas in Mexico. Recently it has been found to extend to extreme western Guatemala: Dept. San Marcos: Wet forest, Barranco Eminencia, above San Rafael Pie de la Cuesta, alt. 2,100–2,400 meters, *Standley* 68669; a tree of 4.5–6 meters; leaves very lustrous. Dry, upper, forested slopes near boundary line,

barrancos tributary to and bordering Río Vega, between San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, *Steyermark* 36365; leaves firm, membranaceous, rich, dark green and shining above, grass-green beneath. Same locality, *Steyermark* 36299; a tree of 9 meters.

ROSACEAE

Licania costaricensis Standl. & Steyerm., sp. nov.—Arbor elata, ramulis crassis teretibus ut videtur interdum ferrugineis, novellis dense pilis rigidulis ochraceis patulis hirsutis, internodiis brevibus; stipulae deciduae, non visae; folia majuscula breviter petiolata coriacea, petiolo crasso ca. 8–10 mm. longo dense breviter hirsuto vel glabrato; lamina late elliptica, rotundo-obovata vel fere obovato-orbicularis 8–14 cm. longa 7–11 cm. lata, apice late rotundata vel interdum abrupte breviter apicata, basi acuta vel subacuta et interdum paullo contracta, supra in sicco fusco-brunnescens lucida glabra vel glabrata, costa nervisque ut quoque venis impressis, pagina ita plus minusve bullata, subtus fere concolor, ad nervos venasque puberula vel glabrata, secus costam sparse adpresso-hirsuta, costa valde elevata, nervis lateralibus utroque latere ca. 9 teneris insigniter elevatis subarcuatis juxta marginem arcuato-conjunctis angulo latiusculo adscendentibus, venis valde prominentibus laxe reticulatis; paniculae parvae axillares solitariae vel fasciculatae simpliciter pinnato-paniculatae vix ultra 5.5 cm. longae sessiles pauciramosae dense multiflorae, ramis gracilibus dense puberulis et hispidulis, floribus sessilibus dense glomeratis minutis, bracteis omnibus minutis inconspicuis; flores campanulati 1.5–1.8 mm. alti et fere aequilati, hypanthio 0.7–0.8 mm. alto hirtello subcoriaceo, intus prope basin hirtello; calycis lobi deltoideo-ovati acutiusculi 0.8–1 mm. longi, basi 1 mm. lati, utrinque hirtelli, erecti; petala cum lobis calycis alternantia prope marginem hypanthii inserta, obovata obtusa basi solemniter angustata, utrinque dense puberula, 0.8–1 mm. longa, prope vel paullo supra medium 0.6 mm. lata, quam lobis calycis tenuioribus; stamina perigyna cum petalis alternantia, antheris introrsis ovalibus vel subglobosis 2-locularibus crassiusculis 0.4–0.5 mm. longis, filamentis 0.5 mm. longis superne incurvis, in disco annulari lobato membranaceo insertis, lobis disci lobos calycis fere aequantibus; stylus gynobasilaris 1.2 mm. longus subulatus, stigmate simplici; ovarium ovale vel late oblongum dense hirtellum 0.3 mm. longum 2-ovulatum.—Costa Rica: In pasture on hill, Villa Quesada, Cantón de San Carlos, Prov. Alajuela, alt. 825 meters, March 14, 1939, *Austin Smith* F1779 (type in Herb. Field Mus.).

"A tree with well rounded crown; bark dark brown, irregular; leaves thickly membranaceous, almost rigid, the venation very prominent, green, not shining above; inflorescence gray-green." Although evidently a member of the genus *Licania,* the present species is so unlike other members of the genus that its relationship at first was not suspected. It has no resemblance to any of the few other species of *Licania* occurring in Central America, and may be recognized at once by its broad, almost glabrous, very conspicuously veined leaves, as well as by its small inflorescences.

Prunus barbata Koehne, Bot. Jahrb. 52: 284. 1915.—The type and the only material reported heretofore for the species, apparently, is *Bernoulli & Cario* 2916 from "Cumbre de Xuipach," Guatemala. One recent Guatemalan collection seems to represent the species: Dept. Suchitepéquez, southwestern, lower slopes of Volcán de Zunil, vicinity of Finca Montecristo, southeast of Santa María de Jesús, alt. 1,200–1,300 meters, January, 1940, *Steyermark* 35262; a tree of 7.5–10 meters; leaves shining above and rich, dark, bright green, pale green beneath; calyx tube greenish white.

Prunus brachybotrya Zucc. Abh. Acad. Muenchen 2: 348. 1837. The tree has been known from various localities and states in southern Mexico, but has not been reported, so far as we know, from Central America. The following Guatemalan collections are referable here, and several sterile specimens from the same country probably are conspecific: Dept. Quiché: Finca San Francisco, Cotzal, alt. 1,110 meters, *Skutch* 1860; a tree of 12 meters, the trunk 37 cm. in diameter, with rough, furrowed bark.—Dept. San Marcos: Volcán de Tajumulco, between Finca El Porvenir and Loma Corona, wooded slopes, alt. 1,300–2,000 meters, *Steyermark* 37742; a tree of 6 meters; leaves subcoriaceous, rich grass-green above, silvery green beneath.

Prunus rhamnoides Koehne, Bot. Jahrb. 52: 283. 1915.—The type is *Heyde & Lux* 3090 from San Miguel Uspantán, Dept. Quiché, Guatemala, at 2,000 meters. At present the species is known only from Guatemala, but it may well extend into Chiapas, since in the Occidente of Guatemala it approaches closely the Mexican border. Guatemala: Dept. Chimaltenango: Cerro de Tecpám, region of Santa Elena, dense *Cupressus* forest, alt. 2,700 meters, *Standley* 58711; a tree of 9–15 meters, with broad crown; common; flowers white.—Dept. Quiché: Nebaj–Aguacatán trail, in hedgerow, alt. 2,430 meters, *Skutch* 1915; a pollarded tree, the trunk 60 cm. in diameter.—Dept. San Marcos: Volcán de Tajumulco, along the road between San Sebastián at km. 21 and km. 8, 8–19 miles northwest of San Marcos, alt. 2,700–3,800 meters, *Steyermark* 35634; a tree of 12 meters; leaves subcoriaceous, rich green above, pale beneath; fruit oblong-ovoid, dull reddish.

Prunus Salasii Standl. Trop. Woods 32: 14. 1932.—At the time *Prunus Salasii* was published, little or nothing was known about it, and there was available only a single specimen, collected in cafetales of Finca El Pintado in the edge of Antigua, Dept. Sacatepéquez, Guatemala, at an elevation of 1,500 meters, by Jorge García Salas, formerly of the Dirección de Agricultura of Guatemala. The species is a very distinct one, and it was published with some suspicion that it might have been introduced into Guatemala, although its collector stated that it was believed to be a native of the mountains of central Guatemala. Too often such statements about cultivated trees of Central America prove erroneous, but in this instance Sr. Salas was quite correct.

The tree is a large, tall one, and makes a handsome shade tree. It grows rapidly, and for both these reasons, perhaps, it is planted commonly in fincas and parks of the central departments. There are numerous fine trees in Antigua, and some in the capital, and doubtless in other parts of the uplands. It probably was Sr. Salas who forwarded seeds of the tree—known in Guatemala by the name Carreto, which would suggest its wood was used in construction of ox carts—to the U. S. Department of Agriculture, and that organization seems to have distributed seeds rather widely. A couple of years ago the senior author received from Australia a letter of inquiry, from a gentleman who stated that he had some of the trees, and wished to know how long it would be before they were fruiting. The fruits are disappointing, although, as might be suspected from their exceptionally large stones, they are very large. When ripe, they are dark red, but the flesh is scant and rather hard, and so extremely bitter as to be altogether inedible. The following collections of the tree have been made lately in Guatemala: Dept. Guatemala: Garden of Don Mariano Pacheco, Guatemala, *Standley* 63116; leaves from a seedling plant.—Dept. Sacatepéquez: Hills of Finca Carmona, southeast of Antigua, alt. 1,600–1,800 meters, damp forest, *Standley* 63738, 63669; a large or very large tree. Above Las Calderas, damp barranco, alt. 1,800 meters, *Standley* 59967; a tree of 9 meters. Antigua, planted in a finca, alt. 1,500 meters, *Standley* 59958; a tree about 9 meters high.—Dept. Quezaltenango: Volcán de Santa María, between Santa María de Jesús and Las Mojadas, alt. 1,500–3,000 meters, *Steyermark* 33947; a tree of 9 meters. The last collection is sterile, and may not be properly referable to *P. Salasii*, but the leaves seem quite characteristic of the species.

LEGUMINOSAE

Bauhinia sericella Standl. Carnegie Inst. Wash. Publ. 461: 60. 1935.—The only collection thus far known from British Honduras is the type, *Schipp* 1197, from Jacinto Creek. Several recent collections indicate an extension of range into Guatemala: Dept. Izabal: Near Puerto Barrios, in *Manicaria* swamp, *Standley* 73167; a small vine; in wet thicket, a woody vine, *Standley* 73064. Wet forest near Entre Ríos, alt. 18 meters, *Standley* 72655; a small vine. Between Bananera and La Presa in Montaña del Mico, alt. 50–150 meters, *Steyermark* 39186; local name Calzoncillo; leaves firmly membranaceous, rich green above, gray beneath.

Caesalpinia exostemma DC. Prodr. 2: 483. 1825.—The tree ranges widely, northward to Oaxaca and southward along the Pacific coast of Central America, but heretofore it has been reported as far south only as Nicaragua, and it was not listed in the *Flora of Costa Rica*. Recently, however, it has been collected on the Pacific coast of Costa Rica: Boca de La Barranca, Puntarenas, March, 1940, *M. Quirós C.* 937.

Cassia pentagonia Mill. Gard. Dict. ed. 8. *Cassia* No. 18. 1768. —In *North American Flora* (23: 242. 1930) Britton and Rose cite this name as a synonym of *Emelista Tora* (L.) Britt. & Rose, i.e. *Cassia Tora* L. Somewhere something may have been published to justify this reduction, but *C. pentagonia* was treated as a distinct species by Bentham in *Flora Brasiliensis* (15, pt. 2: 114. *pl. 34, f. II.* 1870) and in his *Revision of the genus Cassia* (535. 1871). Bentham in the two places cited reports the species from the State of Minas Geraes, Brazil, and from "Central America," whence originally described. The plant illustrated by Bentham in *Flora Brasiliensis* is a very distinct species, in habit similar to *C. Tora*, but with an altogether distinct fruit, noteworthy for its four narrow but conspicuous, longitudinal wings. The following collections of *C. pentagonia* have been made recently in Guatemala: Dept. Guatemala: Estancia Grande, alt. 600 meters, dry thicket, an herb 60–90 cm. high, the plants in fruit and all dried, December, 1938, *Standley* 59187. Near Fiscal, dry, rocky thicket, an herb of 60 cm., alt. 1,100 meters, December, 1938, *Standley* 59609.—Dept. Chiquimula; Margin of lake at La Laguna, alt. 500 meters, October, 1939, *Steyermark* 30719; flowers yellow; local name Frijolillo blanco. The plants found in the Department of Guatemala grew along roads, and looked as if they might have been introduced, but both the localities are somewhat remote ones, and it is more probable that the species is a native of Guatemala and perhaps other parts of Central America, but rare.

Crudia lacus Standl. & Steyerm., sp. nov.—Arbor praeter flores omnino glabra, ramulis fusco-ferrugineis teretibus, novellis viridibus gracilibus; folia modica 4-foliolata, rhachi cum petiolo 3–4 cm. longo gracili viridi, petiolulis ca. 3 mm. longis; foliola paullo inaequalia, inferiora aliquanto minora subcoriacea, plerumque lanceolato-oblonga interdum ovato-oblonga 5–9.5 cm. longa 2–3.8 cm. lata, apicem acutum vel subacuminatum versus angustata, apice ipso obtusissimo, basi paullo inaequalia obtusa vel subrotundata ima basi abrupte contracta et brevissime decurrentia, supra in sicco viridia sublucida, costa anguste subimpressa, nervis venisque prominulis arcte reticulatis, subtus pallidiora et lutescentia vel brunnescentia, costa tenera prominente, nervis lateralibus tenerrimis brevibus angulo lato abeuntibus fere rectis remote a margine junctis, venis prominulis arcte reticulatis; racemi terminales solitarii sat dense multiflori breviter pedunculati, parte florifera 5–6 cm. longa, bracteis minutis, pedicellis rectangule patulis gracilibus viridibus rectis 3–4 mm. longis; sepala cito decidua rotundo-ovata apice obtusa vel rotundata extus sparse pilis laxis subadpressis pilosa, parte persistente basali calycis fere 2 mm. lata; ovarium brevissime stipitatum dense pilosulo-tomentosum oblongo-ovoideum, stylo glabro 5 mm. longo.—Guatemala: Dept. Izabal: Shores of Lake Izabal, on side opposite San Felipe, between Punta Dos Reales and Punta de Lechuga, near sea level, April 17, 1940, *Julian A. Steyermark* 39611 (type in Herb. Field Mus.).

From Central America there have been described only two species of the genus, *Crudia acuminata* Benth. of the Pacific coast of Nicaragua, and *C. Choussyana* Standl. of Salvador. It would naturally be expected that a tree from the Atlantic coast would prove to be a different species, and such seems to be the case, in spite of the scant data available regarding the described species. *C. Choussyana* differs from *C. lacus* in having leaves with 6–8 leaflets. In *C. acuminata*, as described, the leaflets are 6 or fewer and narrowly acuminate, and the racemes are described as 15 cm. long. While collection of further material of the genus may show that only a single species occurs in Central America, it is more likely that all three species will prove to be valid.

NOTES ON THE NORTH AMERICAN SPECIES OF DUSSIA

The genus *Dussia* Krug & Urban was described in 1892 and based upon a single species, *D. martinicensis*, of Martinique. Since that time the group has grown slowly, until 10 species are listed for it, their range extending from southern Mexico to Haiti, Martinique, French Guiana, the Amazon Valley of Brazil, and eastern Peru. All the species that we have seen—and that includes all the published ones except *D. sanguinea* Urban & Ekman of Haiti and *D. Lehmannii* Harms of Colombia—are much alike in general appearance, so much so that if all had been collected in one limited area, probably no one would give them a second glance, or suspect that more than a single slightly variable species was represented. As it is, the species have been established on very slight supposed differences, and it seems likely that when ample material has been assembled in one place for study, at least some will have to be reduced to synonymy. Amshoff, for instance (Medd. Bot. Mus. Utrecht 52: 50. 1939), has reduced two species described by Harms and Ducke to the synonymy of *Dussia discolor* (Benth.) Amsh.

The specimens of *Dussia* that have accumulated from North America are rather numerous, but few of them are in good condition for comparison. The best and perhaps the only characters for separating the species are found in the flowers, and of the 23 sheets at hand, only seven bear good flowers. It may be stated that all the South American material consulted seems to be specifically distinct from the North American, but it is probable that other South American species, such as the Peruvian *D. Tessmannii* Harms, will fall into synonymy. The species now known from North America, of which we have seen material, two of them of rather doubtful systematic standing, are the following:

Dussia martinicensis Krug & Urban in Engl. & Prantl, Pflanzenfam. 3, Abt. 3: 193. 1892.—Known only from Martinique, where it was collected by Duss.

Dussia mexicana (Standl.) Harms, Repert. Sp. Nov. 19: 294. 1924. *Ormosia mexicana* Standl. Contr. U. S. Nat. Herb. 23: 436. 1922.—The following specimens, all from Mexico, are at hand: Zacuapam, Veracruz, in 1913, *Purpus* 6326, type collection. On hillsides and in cafetal, Mirador, Veracruz, only about four trees found, March, 1935, *Purpus* 16459. Mirador, April, 1842, *Liebmann* 5355 (detached leaflets). When *Ormosia mexicana* was published, attention was called to its similarity to *Dussia martinicensis*. This similarity is so great that the two scarcely would have been separated except upon geographic grounds. Harms, in transferring *Ormosia mexicana* to *Dussia*, states that it differs from *D. martinicensis* in its smaller and narrower bracts and small bractlets. No difference is apparent in the bractlets, but the bracts of *D. mexicana* are slightly shorter and narrower than those of the Martinique plant. It is suspected that a future monographer of the group, with ampler material for comparison, will find some difficulty in keying apart the two supposed species.

Dussia cuscatlanica (Standl.) Standl. & Steyerm., comb. nov. *Cashalia cuscatlanica* Standl. Journ. Wash. Acad. Sci. 13: 441. 1923. *Dussia grandifrons* I. M. Johnston, Journ. Arn. Arb. 19: 118. 1938. —Of this tree the following material has been examined, that from the United States National Herbarium having been lent for study through the courtesy of the Curator, Dr. William R. Maxon: Guatemala: Dept. Quezaltenango: Colomba, in coffee plantation with original forest shade, alt. 870 meters, December, 1934, in flower, *Skutch* 2027, type collection of *D. grandifrons;* a tree of 30 meters with open, spreading crown and smooth, gray bark; flowers pale pink with a greenish streak along center of the standard. Rich, forested slopes along Quebrada San Gerónimo, Finca Pireneos, lower, south slopes of Volcán de Santa María, alt. 1,300–2,000 meters, *Steyermark* 33329; local name Palo de tigre; a tree of 7.5 meters. Lower slopes, high barranco along Río Samalá, between Santa María de Jesús and Calahuaché, alt. 1,200 meters, *Steyermark* 33862; a sapling 3 meters tall; leaves firmly membranaceous, rich green above, pale green beneath.—Dept. San Marcos: Wet thicket, Río Ixpal, below Rodeo, alt. 750 meters, *Standley* 68736; a sterile shrub. Middle portion of slopes along barranco, above Finca El Porvenir, lower, south slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, *Steyermark* 37214; local name Soycol de monte; a tree of 9 meters, sterile; leaves all at the ends of the branches, which are bare below. —Dept. Suchitepéquez: Top of ridge slope, southwestern, lower slopes of Volcán de Zunil, near Finca Montecristo, southeast of Santa María de Jesús, alt. 1,200–1,300 meters, *Steyermark* 35244; a sterile shrub.—Salvador: Common in forest, Sierra de Apaneca, in the region of Finca Colima, Dept. Ahuachapán, January, 1922, *Standley* 20197; type of *Cashalia cuscatlanica;* local name Cashal; a large, deciduous tree, furnishing valuable wood. Colina de Santa Tecla, in 1924, *Calderón* 2070; local name Cashal; in 1923, *Calderón* 1752; a very large tree. Comasagua, December, 1922, *Calderón* 1379; a tree as large as *Sterculia apetala.*—Costa Rica: In forest, La

Palma de San Ramón, alt. 1,275 meters, November, 1925, *Alberto Brenes* 4627 (sterile, but probably referable here).

The genus *Cashalia* was based upon a single species, *C. cuscatlanica,* and later a second species, *C. panamensis,* was described. When published, *Cashalia* was compared with *Tounatea,* i.e. *Swartzia,* to which in fact it is not closely related. The type material was in poor condition for study, consisting of foliage with fallen, old flowers. It seems to be somewhat characteristic of *Dussia* that the standard persists as the flowers wither, while the other petals fall, and on this account the flower of *Cashalia* was described falsely as possessing a single petal. Comparison of the type material with the excellent specimens of *Dussia grandifrons* made by Dr. Skutch leaves no doubt that the two names pertain to the same tree, for which the name *Dussia cuscatlanica* must be adopted. The genus *Cashalia* was accepted by Britton and Rose in their treatment of the Caesalpiniaceae in *North American Flora* (23: 348. 1930).

Dussia macroprophyllata (Donn. Smith) Harms, Repert. Sp. Nov. 24: 212. 1928. *Diplotropis macroprophyllata* Donn. Smith, Bot. Gaz. 56: 56. 1913. *Cashalia panamensis* Standl. Field Mus. Bot. 4:212. 1929.—The following material has been studied: Costa Rica: Forests of Las Vueltas, Tucurrique, alt. 635 meters, January, 1899, *Tonduz* 12949, type, in U. S. Nat. Herb.; a large tree with rounded crown.—Panama: Holstein Farm, region of Almirante, Prov. Bocas del Toro, in 1928, *G. Proctor Cooper* 520; type of *Cashalia panamensis;* local name Citrón; a tree 18 meters tall, the trunk 37 cm. in diameter, growing against the trunk of a huge guayacán; fruits red; bark has a red sap and is used as a purge; red skin of the fruit used as a febrifuge and sold in the local drug stores. It is not quite certain that *Cashalia panamensis* is synonymous with *Dussia macroprophyllata,* there being slight differences in pubescence of the leaves, but the general appearance of the specimens is so similar that we have little hesitation in making the present disposition of the Panama tree. The species is quite distinct from *D. cuscatlanica,* particularly in its large and broad leaflets, rounded or very obtuse at the apex, thick and somewhat rugose; and the inflorescences and flowers of the two species are very different.

Galactia minarum Standl. & Steyerm., sp. nov.—Herba gracilis, caulibus teretibus dense pilis patulis albidis pilosis, internodiis elongatis; folia majuscula petiolata trifoliolata membranacea, petiolo gracili 2–3.5 cm. longo dense breviterque piloso, stipellis subulatis brunneis 1 mm. longis, petiolulis crassiusculis ca. 3 mm. longis,

petiolulo terminali cum rhachi 6–10 mm. longo; foliola lanceolato-oblonga subaequalia, terminali paullo longiore, 4.5–9 cm. longa 1.7–3.5 cm. lata, acuminata vel longiacuminata, subulato-mucronata, basin versus paullo angustata, basi ipsa obtusa vel anguste rotundata, supra in sicco olivacea minute pallido-puncticulata praesertim ad costam nervosque breviter pilosa, glabrescentia, subtus pallidiora ubique dense pilis cinereis patulis vel subadpressis pilosa, costa tenera prominente, nervis lateralibus utroque latere ca. 9 subarcuatis obliquis angulo semirecto vel paullo latiore adscendentibus; racemi axillares simplices laxe multi- vel pauciflori 4.5 cm. longi vel breviores breviter pedunculati, rhachi densissime albido-pilosa, bracteis bracteolisque subulatis dense patulo-pilosis, pedicellis dense pilosis usque 3 mm. longis; calyx extus fere ubique dense albido-pilosus, lobis superioribus lineari-lanceolatis 6–7 mm. longis longiattenuatis, infimo paullo angustiore ca. 8 mm. longo; petala roseo-purpurea glabra, vexillo obovato apice rotundato et ciliato, ca. 12 mm. longo et 6 mm. lato; legumen juvenile late lineare ca. 1.5 cm. longum et 2.3 mm. latum dense patulo-pilosum acuminatum sessile, stylo glabro gracillimo 8 mm. longo.—Guatemala: Dept. Zacapa, steep, rocky slopes in pine forest, Sierra de las Minas, along trail between Río Hondo and summit of mountain at Finca Alejandria, alt. 1,000–1,500 meters, October 11, 1939, *Julian A. Steyermark* 29640 (type in Herb. Field Mus.).

Flowers rose-purple. Distinguishing characters of the plant are the long-acuminate, densely and softly pubescent leaflets, and the short, solitary racemes of rather large and showy flowers.

Pithecolobium Zollerianum Standl. & Steyerm., sp. nov.—Arbor 15-metralis, ramulis crassis subteretibus vel obtuse angulatis densissime pilis brevibus patulis brunneis obtectis et fere tomentulosis; stipulae parvae lineari-subulatae caducae; folia magna bipinnata 30–40 cm. longa breviter petiolata, petiolo crasso tereti dense fulvo-pilosulo paullo infra pinnas infimas glandulo parvo subdepresso onusto, rhachi 16–22 cm. longa infra nodos singulos glandulo parvo onusta; pinnae plerumque 8–13-jugae 6–16 cm. longae brevissime petiolatae, rhachi eglandulosa; foliola plerumque 8–18-juga membranacea sessilia oblonga 15–20 mm. longa 5–7 mm. lata, apice rotundata vel obtusissima, basi valde obliqua, latere exteriore angustata, interiore oblique truncata, supra laete viridia lucida tantum ad costam puberula, nervis venisque prominulis, subtus pallidiora flavescentia glabra, vel primo sparse adpresso-pilosula, costa prominula subcentrica, nervis prominulis; pedunculi axillares geminati simplices 8–12.5 cm. longi nudi dense minute pilosuli; flores umbellati, umbellis capituliformibus dense multifloris, bracteis minutis vel obsoletis, pedicellis crassiusculis vix ultra 2 mm. longis minute sparseque puberulis; calyx anguste campanulatus 2.5 mm. longus sparse minutissime puberulus vel fere glaber, pallide viridis, dentibus remotis brevissimis triangularibus; corolla 6–7 mm. longa sparse minute puberula vel fere glabra profunde dentata, dentibus ovato-oblongis acutis erectis; stamina numerosa, filamentis viridi-albis 2.5 cm. longis vel ultra; legumen solemniter curvatum semicirculare vel circulare, valde compressum glabrum, valvis sublignosis sed tenuibus inter semina subconstrictis 1.5 cm. latis vel paullo ultra extus brunnescentibus; semina ut videtur exarillata compressa disciformia ovali-orbicularia brunnescenti-ochracea 8 mm. longa 7 mm. lata lucida laevia.—Guatemala: Dept. San Marcos: Above Finca El Porvenir, up Loma Bandera Shac, lower south-facing slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, March 9, 1940, *Julian A. Steyermark* 37440 (type in Herb. Field Mus.).—Dept. Quezaltenango: Damp forest, Finca Pireneos, below Santa María de Jesús, alt. 1,350 meters, March, 1939, *Standley* 68428 (sterile). Along Quebrada San Gerónimo, Finca Pireneos, alt. 1,300–2,000 meters, on slopes covered by tree ferns, *Steyermark* 33295; local name Plumillo.

A large tree; leaves rich, dark green above, paler grass-green beneath. In the treatment of the tribe *Ingeae* by Britton and Rose in *North American Flora* the key to their *Pithecolobium* segregates is vague and most unsatisfactory, and it is difficult to decide into which of their segregate genera the present species would fall. It seems to run in the key to their genus *Painteria,* but with that group of Mexican species it has no close relationship. The general appearance of *P. Zollerianum* suggests most the genus *Albizzia,* but in that the valves of the fruit are relatively very thin, and the Guatemalan tree can not be referred there. The species is named for Mr. Erich Zoller of Finca El Porvenir, who greatly facilitated the junior author's explorations of the Volcán de Tajumulco.

ERYTHROXYLACEAE

Erythroxylon Skutchii Standl., sp. nov.—Frutex gracilis 5-metralis glaber, ramulis crassiusculis ochraceis striatis, internodiis brevibus; stipulae deciduae insigniter elongatae usque 7 cm. longae lineares erectae brunneae striato-nerviae, longitudine valde variabiles, aliae 2.5 cm. tantum longae, apice filiformi-protractae; folia magna breviter petiolata firme coriacea, petiolo crasso 1.5–2 cm.

longo supra canaliculato; lamina lanceolato-oblonga vel anguste elliptico-oblonga 16–23 cm. longa 6–8 cm. lata acuta vel acuminata, basi acuta, supra in sicco fusca, costa nervisque subimpressis, venis non elevatis, subtus multo pallidior, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 11 irregularibus valde prominentibus subarcuatis angulo latiusculo adscendentibus, remote a margine irregulare conjunctis, venis valde elevatis laxe areolato-reticulatis; flores axillares vel ad nodos defoliatos fasciculati dense congesti numerosi, pedicellis crassis angulatis 3–7 mm. longis inaequalibus, bracteis glumiformibus ovatis vel lanceolatis longiacuminatis 5–6 mm. longis striatis persistentibus; sepala ca. 4 mm. longa ovata acuminata.—Costa Rica: In forest, basin of El General, Prov. San José, alt. 1,000 meters, March, 1940, *Alexander F. Skutch* 4847 (type in Herb. Field Mus.).

From other large-leaved *Erythroxylon* species of Central America, the Costa Rican plant is distinguishable at once by the coarse and very prominent venation of the lower leaf surface.

TRIGONIACEAE

Trigonia floribunda Oerst. Vid. Medd. 1856: 38. 1856.—As at present understood, the species is a variable one, but chiefly in the quality and amount of pubescence. Since the pubescence varies greatly upon the same plant, the leaves being densely floccose-tomentose or glabrate sometimes upon the same branch, it is evident that pubescence alone can not be utilized in separating North American species, and it is probable that after all, the Central American plants must all be referred to a single species, with one possible exception. In *North American Flora* (25: 298. 1924) *T. floribunda* is reported as occurring from Salvador to Panama, but recent collections have extended its known range to Guatemala and Chiapas: Guatemala: Dept. Suchitepéquez: Damp thicket along Río Madre Vieja, above Patulul, alt. 450 meters, *Standley* 62202; a woody vine, sterile.—Dept. Chiquimula: Rocky outcrops along gorge of Río Chiquimula, between Santa Bárbara and Petapilla, 4–6 miles north of Chiquimula, alt. 350–420 meters, *Steyermark* 30244; shrubby, with twining tips. Grassy slope of Mount Tojás, near village of Sasmo, about one mile northwest of Chiquimula, alt. 420–520 meters, *Steyermark* 30199; leaves dark green above, white beneath.—Mexico: Mt. Madre Vieja, Chiapas, alt. 1,000 meters, *Matuda* 2517.

Trigonia panamensis Standl., sp. nov.—Ramuli graciles subteretes brunnei rimosi puberuli, internodiis brevibus; folia modica petiolata membranacea, petiolo gracili 11–15 mm. longo dense incurvo-puberulo; lamina oblonga vel lanceolato-oblonga 8.5–11 cm. longa 3–4 cm. lata acuta vel subacuminata, apice ipso acuto, basi obtusa vel subacuta, supra fere glabra sed ad costam nervosque pilis paucis brevibus subadpressis conspersa, venis prominulis arcte reticulatis, subtus pallidior primo araneoso-tomentosa sed cito glabrata, costa tenera elevata, nervis lateralibus utroque latere ca. 8 teneris prominentibus arcuatis angulo latiusculo adscendentibus, venis prominentibus arcte reticulatis; panicula terminalis magna sessilis pyramidalis laxe ramosa ca. 24 cm. longa et aequilata simpliciter pinnata, ramis gracilibus patentibus dense puberulis, floribus in cymulas parvas paucifloras dispositis, cymulis racemosis breviter vel longius pedunculatis, pedunculis usque 6 mm. longis rectangule patulis, bracteis persistentibus lanceolato-ovatis sparse minuteque puberulis vix ad 2 mm. longis, pedicellis plerumque 2–3 mm. longis; sepala ca. 3 mm. longa extus dense minute griseo-tomentella intus glabra paullo inaequalia lanceolato-oblonga obtusa vel subacuta; ovarium dense pilosum.—Panama: Barro Colorado Island, Fairchild Point, Canal Zone, July 14, 1934, *Silvestre Aviles* 961 (type in Herb. Field Mus.). Barro Colorado Island, in 1929, *S. W. Frost* 175 (sterile, but doubtless referable here).

Trigonia floribunda Oerst., the common species of Central America, with which this Panama species has been confused heretofore, differs in its condensed inflorescence of decidedly different appearance, with sessile or subsessile cymules and very shortly pedicellate flowers.

EUPHORBIACEAE

Phyllanthus Skutchii Standl., sp. nov.—Arbor 25-metralis fere omnino glabra, ramulis gracilibus teretibus ochraceo-brunnescentibus substriatis glabris, internodiis plerumque 1–2 cm. longis; stipulae subpersistentes anguste triangulares rigidae acutae vel subacuminatae 1.5 mm. longae erectae; folia modica breviter petiolata firme membranacea alterna, petiolo crassiusculo ca. 4 mm. longo glabro; lamina lanceolato-oblonga usque ovato-oblonga vel ovata 6–9.5 cm. longa 2.5–3.5 cm. lata sensim vel subabrupte acuminata vel longiacuminata, acumine angusto sensim attenuato saepe subfalcato, basi obtusa, supra in sicco viridescens sublucida, costa subimpressa, nervis venisque prominulis, glabra, subtus pallidior saltem in statu adulto fere omnino glabra sed ad nervos prope basin laminae pilis paucis brevissimis conspersa, costa tenera prominente, nervis lateralibus utroque latere ca. 7 tenerrimis prominentibus arcuatis

angulo lato adscendentibus juxta marginem arcuato-junctis, venulis prominentibus arcte reticulatis; flores monoeci in axillis dense fasciculati, masculi numerosi, feminei pauci vel in quaque axilla uno, masculi sessiles vel breviter pedicellati, pedicellis florum femineorum filiformibus magis elongatis in statu fructifero 5–6 mm. longis glabris; sepala floris masculi late ovalia apice obtusa vel rotundata glabra paullo inaequalia vix ad 1 mm. longa, flore ca. 1.2 mm. lato; sepala floris feminei 6 glabra in statu fructifero ca. 3 mm. longa anguste oblonga usque spathulato-obovata obtusa viridia uninervia; capsula subglobosa ca. 8 mm. alta et 9 mm. lata sessilis basi rotundata, apice subumbonata, glabra, fere teres.—Costa Rica: Vicinity of El General, Prov. San José, alt. 670 meters, June, 1939, *Alexander F. Skutch* 4325 (type in Herb. Field Mus.); flowers white.

In general characters and appearance the species has no close resemblance to any other known from Central America. It is especially remarkable for the large size of the plant, trees being rare in the genus, particularly ones attaining a height of 25 meters.

Sebastiania longicuspis Standl. Field Mus. Bot. 11: 134. 1932. —The tree has been reported from various localities in British Honduras, whence the species was described, as well as from Petén and Alta Verapaz, Guatemala. Two recent collections from Guatemala are worthy of record: Dept. Izabal; Bank of Río Dulce, *C. L. Wilson* 408; a low tree. Bay of Santo Tomás, between Escoba and Santo Tomás, at sea level, *Steyermark* 39234; a tree; leaves subcoriaceous, dark green above, pale green beneath; flowers greenish.

CELASTRACEAE

Euonymus acuminatus Benth. Pl. Hartw. 59. 1840.—Plants of the genus *Euonymus* seem to be very rare in Mexico and Central America, or else they have escaped collectors, for but few specimens accumulate in herbaria. *E. acuminatus* was described from Llano Verde, Mexico, and appears to be represented by the following Guatemalan collections: Chichavac, Dept. Chimaltenango, October, 1933, *Skutch* 627; a rare shrub in deep, shady ravine, below 2,700 meters; aril red. Dept. Guatemala, in 1940, *Ignacio Aguilar* 434.

SAPINDACEAE

Serjania pterarthra Standl. Carnegie Inst. Wash. Publ. 461: 70. 1935.—Described from Tuxpeña, Campeche, Mexico, and reported also from Little Fall, Belize River, British Honduras. Two other collections may be recorded for this unusually well marked species: Guatemala: El Paso, Petén, a frequent vine, *Lundell* 1531.—Mexico: Mercedes, Balancán, Tabasco, *Matuda* 3017.

TILIACEAE

Mortoniodendron guatemalense Standl. & Steyerm. Bot. Ser. Field Mus. 22: 157. 1940.—This species was originally described from flowering material only. Recent collections made in Guatemala (*Steyermark* 39395 and 39414) in the fruiting stage of the plant show that the fruit is 3-celled, obtusely angled, dull green, apiculate, loculicidally dehiscent, 2–2.2 cm. long, 1.5–1.8 cm. broad, the exocarp dull green, the endocarp creamy buff, 1 mm. in thickness, the locules each 2-seeded, the seeds not completely filling the locule, loosely covered by a fleshy, deep orange aril attached to the hilum and raphe, ovoid, plano-convex, slightly umbonate and rounded at one end, pointed at the other, 7–8 mm. long, 5–6 mm. broad in the widest portion, the testa brown, thinly crustaceous, glabrous, smooth, the endosperm copious, completely filling the seed, cream-colored. The fruit is much smaller than that of *Mortoniodendron anisophyllum* (Standl.) Standl. & Steyerm. Additional collections of *Mortoniodendron guatemalense* from Guatemala are as follows: Dept. Izabal: Río Dulce, between Livingston and 6 miles up river, on north side (right-hand side going up river), at sea level, April 14, 1940, *Steyermark* 39414; same locality and date, *Steyermark* 39395 and 39386a; a tree 6 meters tall. In wet forest, Escoba, across the bay (west) from Puerto Barrios, near sea level, May 3, 1939, *Standley* 72874.

COCHLOSPERMACEAE

Amoreuxia palmatifida Sessé & Moc. ex DC. Prodr. 2: 638. 1825.—The plant has a wide but somewhat erratic range, extending in Mexico from Sonora southeastward to Yucatán, although there are many intervening areas, of course, in which it does not grow. Its occurrence in Yucatán, near Izamal, is scarcely to be expected, but it is perhaps less remarkable in view of the fact that the plant has been collected recently in the dry Motagua Valley of Guatemala, this being its first record for Central America: Dept. Zacapa, desert near Estanzuela, alt. 200 meters, in flower and fruit, October 5, 1939, *Steyermark* 29094; flowers orange. It is to be noted that De Candolle in describing the genus *Amoreuxia* (loc. cit.) gave no author for either the genus or species, merely citing "fl. mex. ic. ined.," which would be presumed to be that of Sessé and Mociño. A photograph of the plate of these authors, upon which the descriptions of genus and species were based, is in the Herbarium of Field Museum.

VIOLACEAE

Rinorea Blakeana Standl., sp. nov.—Frutex 2–3-metralis, ramis gracilibus teretibus ochraceis longitrorsum rugosis vel rimosis glabris, internodiis plerumque brevibus; folia alterna modica breviter petiolata membranacea, petiolo gracili glabro usque 5 mm. longo; lamina anguste lanceolato-oblongo 7–11 cm. longa 2–3 cm. lata longissime et angustissime caudato-acuminata, acumine longo ipso obtuso, basi obtusa, utrinque glabra, supra in sicco intense viridis, costa nervisque prominulis, venis prominulis laxe reticulatis, subtus pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 8–9 prominentibus angulo lato adscendentibus subarcuatis, venulis prominulis laxe reticulatis, margine integro vel obscure undulato; inflorescentiae parvae pauciflorae axillares, pedunculis vix ultra 3 mm. longis, floribus ad apicem fasciculato-umbellatis, vulgo ca. 3, pedicellis ca. 4 mm. longis minute puberulis; sepala inaequalia orbicularia usque rotundo-ovata 1.2–1.8 mm. longa apice rotundata dorso fere glabra ciliolata; corolla in alabastro ovoidea acutiuscula glabra, petalis ca. 5 mm. longis apice breviter recurvis.—Panama: Cana Cuasi trail, Camp 2, Chepigana District, Prov. Darién, 600 meters, March 12, 1940, *M.E. & R. A. Terry* 1513 (type in Herb. Field Mus.).

The only other Central American species with alternate leaves is *Rinorea crenata* Blake, of Talamanca, Costa Rica. That has a paniculate inflorescence and much broader leaves that are minutely hirtellous beneath along the costa. The species is named for Dr. S. F. Blake, monographer of the American species of the genus.

FLACOURTIACEAE

Olmediella Betschleriana (Goepp.) Loes. Notizbl. Bot. Gart. Berlin 4: 181. 1906. *Ilex Betschleriana* Goepp. Del. Sem. Vratisb. 1852; Linnaea 26: 745. 1853–54. *Olmediella ilicifolia* Baill. Bull. Soc. Linn. Par. 1: 253. 1880. *O. Cesatiana* Baill. loc. cit. *Ličopolia sincephala* Rippa, Bull. Orto Bot. Napoli 2: 74. 1904.—The tree to which this name applies has had a most varied history. It has been in cultivation in Europe, particularly in Italy, for more than 80 years, having been introduced doubtless on account of its holly-like foliage. There, apparently, it seldom flowers or fruits, and with only the foliage available, botanists who saw the plants had great difficulty in determining their proper relationship, and referred them to such genera as *Quercus* and *Sapium*, or most often to *Ilex*, because of the spiny-dentate leaves. The name *Olmediella* was given the genus

because it was believed to belong to the family Moraceae. The early history was brought together by Loesener (loc. cit.), who gave a most satisfactory account also of the true relationship of the genus. It, strangely enough, is apparently most closely related to the African genus *Doryalis* of the Flacourtiaceae.

The source of the European plants remained unknown for many years, and it was not until 1932 that the senior author was able to report definitely (Trop. Woods 32: 17) that *Olmediella* was a native of the Guatemalan mountains. Its nativity there is now well established, and the tree has been found to grow also in Honduras and the State of Chiapas, Mexico. All the specimens now available to the writers are cited below.

Guatemala: Dept. Guatemala: La Cienaguilla, San José Pinula, alt. 1,600 meters, in 1932, *J. G. Salas.* Amatitlán, alt. 1,100 meters, January, 1928, *Morales Ruano* 830. Guatemala City, cultivated, June, 1932, *Salas.* Volcán de Pacaya, damp forest, alt. 1,800–2,400 meters, *Standley* 58477; a large tree, common; local names Manzana and Manzanote; fruit green.—Dept. Jalapa: Cloud forest on top of ridge, between Miramundo and summit of Montaña Miramundo, alt. 2,500 meters, *Steyermark* 32688; local name Manzanote; a tree of 11 meters; leaves coriaceous, dark, dull green above, paler beneath.—Dept. Sacatepéquez: Parque Central de Antigua, October, 1929, *Salas* 1385. Damp forest, hills of Finca Carmona, southeast of Antigua, alt. 1,600–1,800 meters, *Standley* 63672; a large or small tree in damp forest, common.—Dept. Chimaltenango: Slopes of Volcán de Acatenango, above Las Calderas, in dense, wet *Chiranthodendron* forest, alt. 2,400–2,700 meters, *Standley* 61968; a small tree.—Dept. Quezaltenango: Western slopes of Volcán de Zunil, opposite Santa María de Jesús, alt. 1,500 meters, *Steyermark* 35093; a shrub.—Dept. San Marcos: Wet forest, Barranco Eminencia, above San Rafael Pie de la Cuesta, alt. 2,100–2,400 meters, *Standley* 68685; a small tree with very lustrous leaves. Top of dry barranco slopes, between town of Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, alt. 1,800–2,500 meters, *Steyermark* 36846; a tree of 12 meters.—Mexico: Pinada, Siltepec, Chiapas, *Matuda* 1988.—Honduras: Dept. Tegucigalpa: Montaña de la Flor, alt. 1,440 meters, in pine and oak region, *Christine & Wolfgang von Hagen* 1247; a spreading tree of 9 meters; local name Cumbo de cerro.—Dept. Siguatepeque: Ravine at El Achote, above the plains of Siguatepeque, alt. 1,350 meters, *Yuncker, Dawson & Youse* 6227; a tree of 3.5 meters. Thickets west of El Achote, No. 6200 of the same collectors. Siguatepeque, alt. 1,110 meters, open, mountain forest, *J. B. Edwards* P492; a tree of 15 meters.—Cultivated in Europe: Cult. in hort. Neapolitano, May, 1905, *Delpino & Rippa* (received from Dr. Loesener).

It should be mentioned that the first material that permitted definite reference of the tree to its native region was that forwarded by Sr. Jorge García Salas, then of the Dirección de Agricultura of Guatemala. To a Guatemalan so many words about the Manzanote tree, as it is commonly known, would seem rather amusing, for Manzanote is one of the commonest street and park trees of Antigua and Guatemala, and few residents of those cities pass the day without seeing a few or many of the trees. They grow luxuriantly in the Parque Central of Antigua, in front of the old Palace of the Viceroys of Guatemala, as well as in many of the parks of Guatemala and other upland cities. In the capital there are many handsome avenues of the trees, the finest being that along the Paseo de la Reforma, principal boulevard of Guatemala.

The tree is a particularly effective one for street and park planting, and would be desirable for any cool but not too cold region in which it would grow. It is probable that it would thrive, for instance, about San Francisco, California. Even from a considerable distance the cultivated trees are easy to recognize because of their low, rounded crowns of remarkably dense, dark green foliage, which reminds one strongly because of both its color and the stiff, spiny-margined leaves, of the Christmas hollies. Part of the denseness of the crowns may result from pruning or clipping, but this is not certain. In the dense, moist forests where the trees grow naturally, they are quite different, with tall trunks and rather open, irregularly branched crowns, but that, of course, is the natural effect of deep shade. The leaves are decidedly variable in the species, most of them being deeply sinuate-dentate, each tooth tipped with a stout, sharp spine, but on the ultimate branches of mature trees the leaves often are quite entire.

TURNERACEAE

NOTES ON THE AMERICAN SPECIES OF ERBLICHIA

Erblichia odorata Seem. (Bot. Voy. Herald 130. *pl. 27.* 1854), originally described from "Paredez Islands, coast of southern Veraguas," Panama, has been a catch-all for the Mexican and Central American specimens of the genus that have gradually accumulated in American herbaria. As a result of our study of material of this genus preserved in the Herbarium of Field Museum and that in the United States National Herbarium, lent through the courtesy of its curator, Dr. William R. Maxon, it has been found that the species described as *E. odorata* Seem. is a rare and local one restricted to Panama and Costa Rica, while the more commonly collected and more widely ranging plants of Mexico south to Honduras may be referred to two other species and one variety, namely, *E. Standleyi* Steyermark, and *E. xylocarpa* (Sprague & Riley) Standl. & Steyerm. and *E. xylocarpa* var. *mollis* Standl. & Steyerm.

All the American representatives of the genus *Erblichia* are forest trees of great size with strikingly beautiful, large flowers. Indeed, they easily rank among the showiest trees found in the Mexican and Central American tropics. When *E. odorata* was first published the flowers were described by Seemann as yellow, "flavis." Subsequently, the plants from Costa Rica, which belong to the same species, have been noted by collectors, including Standley, also as "bright yellow," and Standley in the *Flora of Costa Rica* records the color of the petals of this species as "yellow." Collectors who have noted the color of the flowers of *Erblichia* in other parts of Central America and Mexico have described the color as orange or reddish orange. The junior author has seen the trees in several parts of Guatemala, where in all instances the petals were of a brilliant flame-color of bright, deep orange, reddish orange, or reddish salmon; never was there any suggestion in these trees of yellow, such as has been recorded for the true *E. odorata* of Panama and Costa Rica.

The various entities which the present study has revealed may be keyed as follows:

Ovary glabrous; young branches from the beginning entirely glabrous. *E. Standleyi.*

Ovary velutinous; young branches from the beginning velutinous.

- Lower leaf surface loosely and densely velutinous. 2a. *E. xylocarpa* var. *mollis.*
- Lower leaf surface glabrous or sparsely appressed-pubescent with scattered hairs.
  - Petals yellow; style spreading-villous at the base; plants of Panama and Costa Rica........................*E. odorata.*
  - Petals red-orange; style glabrous at the base; plants of Honduras north to southern Mexico. . 2. *E. xylocarpa* var. *typica.*

Erblichia odorata Seem. Bot. Voy. Herald 130. *pl. 27.* 1854; Standley, Bot. Ser. Field Mus. 18: 726. 1937. *Piriqueta odorata*

Urban, Jahrb. Bot. Gart. Berlin 2: 80. 1883.—In addition to the original collection cited by Seemann, "on the outskirts of woods, Paredez Islands, coast of southern Veraguas," Panama, the following Costa Rican collections are at hand: Guanacaste, scarce, dry forest, a tree of 17 meters with narrow, thin crown, flowers bright yellow, vicinity of Tilarán, alt. 500–650 meters, January, 1926, *Standley & Valerio* 45718; a tree 7.5 meters tall, with small, narrow crown, petals bright yellow, sepals green; January, 1926 *Standley* 46347. Finca Colombia, San Ramón, February, 1940, *Manuel Quirós C.* 927; a small tree with golden yellow flowers.

Erblichia xylocarpa (Sprague & Riley) Standl. & Steyerm., comb. nov. *Piriqueta xylocarpa* Sprague & Riley, Kew Bull. 1923: 373. 1923. *Erblichia odorata* acc. to Standley, Contr. U. S. Nat. Herb. 23: 847. 1923, as to reference of plants of Mexican distribution, not as to description.—This is the more commonly collected and widely distributed plant that has passed as *E. odorata* Seem. In view of the fact that *Piriqueta xylocarpa* was originally described from a fruiting specimen collected in British Honduras (*Campbell* 33), and since flowering material of the species has subsequently accumulated, it seems advisable to append a description of the flowers, which heretofore has not been published.

Sepals lanceolate or linear-lanceolate, 5–6.5 cm. long, 0.6–1 cm. broad, long-acuminate or caudate, some of them yellow-green on the outside, others pale green with a broad, green midrib or central portion and salmon or pale orange margins, appressed-puberulous on the outside mainly down the middle and at the base of the lobes; petals bright orange, tango-orange, or orange-salmon, cuneate-rhombic-obovate, cuspidate or abruptly caudate at the apex, conspicuously narrowed in the lower third, 6–8 cm. long, 3.5–4.5 cm. broad in the upper or broader half, finely canescent-puberulent at the extreme base, within for 9 mm. upward, without for 5–6 mm. upward; filaments dilated in the lower half, orange or orange-salmon, 4.5 cm. long, 2 mm. broad in the lower half, densely villosulous in the lower half, glabrous in the upper half; anthers versatile, linear-oblong, ochraceous, 4–6 mm. long, 1–1.3 mm. broad, appendiculate at the tip with a process 0.7 mm. long; stigma capitate, fimbriate; styles orange or orange-salmon, 4.5–5 cm. long, entirely glabrous or with a few sparse, appressed hairs at the very base; ovary usually densely velutinous with short, ascending, stiff, yellow-brown hairs.

The following specimens have been examined: Mexico: Nayarit: "Suelda con suelda," Cerro de la Gloria, alt. 400 meters, in 1923, *J. G. Ortega* 47.—Guatemala: Dept. Petén: San Diego, Río Pasión, April, 1935, *Mercedes Aguilar* 500.—Dept. Alta Verapaz: "Canop," a tree 22 meters tall, forested hillsides, Chamá, alt. 900 meters, March, 1920, *Harry Johnson* 1861. "Conop," Río Canguinic, alt. 320 meters, March, 1902, *Tuerckheim* 8182.—Dept. Izabal: "Candelaria," a tree of 18–21 meters, leaves firmly membranaceous, dark, rich green above, paler grass-green beneath, low forest slopes, between Bananera and La Presa, in Montaña del Mico, alt. 40–300 meters, March, 1940, *Steyermark* 38294.—British Honduras: Camp 32, British Honduras-Guatemala Boundary, a forest tree 18 meters tall, flowers tango-orange, April, 1934, *Schipp* S718. Medium-sized tree on Columbia River, in high ridge, April, 1933, *M. O. Hope* 18. Small to medium tree, occurring rarely up Columbia Valley, March, 1929, *M. A. Balderamos*.—Salvador: Ahuachapán, "Flor de fuego," in 1924, *Sisto Alberto Padilla*.

Erblichia xylocarpa is rather variable in the amount of pubescence of the young branches, petioles, peduncles, and under surface of the leaves. *Campbell* 33, type of Sprague and Riley's *Piriqueta xylocarpa*, is a glabrate extreme of this species. Its branches are described as "glabri vel glabriusculi, fusco-cinerei," leaves "glabra," petioles "glabri," peduncles "glabriusculi," stipules (bracts) "superne subappresse fulvo-pilosae," and capsule "juventute minute puberula, demum glabra." Unfortunately, since the plant was described from a fruiting specimen, nothing is known of the flowers and, therefore, the glabrousness of the plant has been emphasized in the description, since mature specimens show a proportionate decrease of pubescence. Some of the above specimens cited, namely *Hope* 18, *Ortega* 47, and *Steyermark* 38294, somewhat approach the more nearly glabrate types. The petioles vary from densely fulvous-puberulent to glabrate with a few sparse, appressed hairs in the plant collected by Hope. The same type of variation is found on the young branches and lower surface of the blades. In the latter the midrib usually has sparse, appressed hairs, but in age these may disappear almost entirely; moreover, the lower surface of the blade is usually glabrous, but may have a few appressed ones scattered over its surface. Sprague and Riley stated that their species differed from *Erblichia odorata* in having longer, slender petioles, proportionately narrower blades narrowed at the base, with inconspicuously, if at all, crenate margins, and curved seeds. So far as the supposed vegetative differences mentioned above are concerned, these are unimportant and not at all diagnostic characters, since the specimens we have examined show variation in the length of the petioles and in the proportionate size of the blades. Moreover, the margins of the blade are usually inconspicuously crenate, as in the Steyermark and Schipp specimens, but may be more prominently crenate, as shown by the Padilla specimen.

In the western part of the range of *E. xylocarpa* a very pubescent extreme, common in southwestern Guatemala and southern Mexico, is found. It may be described as:

Erblichia xylocarpa var. mollis Standl. & Steyerm., var. nov.—A typo recedit ramulis juvenilibus, petiolis pedunculisque dense fulvo-velutinis; laminis subtus dense fulvo-velutinis praesertim ad costam mediam laminae supra fulvo-velutinis, aliter plerumque glabris, marginibus vulgo prominenter mucronato-crenatis; sepalis extus fulvo-tomentosis; petalis flammeo-aurantiacis 5.5–8.5 cm. longis, 3.5–4.5 cm. latis, cuneato-rhomboideo-obovatis; filamentis inferne villosulis; stylis prope basin hirsutulis; ovario dense fulvo-tomentoso.—Mexico: Chiapas: Mt. Ovando, February, 1939, *Matuda* 2653. Volcán de Tacaná, Finca La Unión, March, 1939 *Matuda* 2789. Near Chicharras, alt. 2,000 meters, February, 1896, *E. W. Nelson* 3803.—Oaxaca: "Jarro de Oro, Azuche," Cafetal San Rafael, alt. 800 meters, December, 1917, *B. P. Reko* 3702. A tree of 30 meters, Cerro San Rafael, alt. 800 meters, August, 1926, *E. Makrinius* 643.—Guatemala: Dept. Sololá: A forest tree of 18 meters, Volcán de Atitlán, alt. 1,333–1,666 meters, February, 1939, *F. W. Owen Smith.*—Dept. Quezaltenango: "Candelaria de montaña," a tree of 12–15 meters, petals bright orange, leaves firmly chartaceous, rich, dark grass-green above, pale green beneath, ridge top along Quebrada San Gerónimo, Finca Pireneos, lower, south-facing slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–2,000 meters, January, 1940, *Steyermark* 33448 (type in Herb. Field Mus.). Also observed by the junior author in Guatemala on Volcán de Zunil, Volcán de Tajumulco, and Volcán de Tacaná.

The dense, tawny or tan-colored pubescence is characteristic of this variety and is especially well developed on the young branchlets, peduncles, petioles, lower surface and midrib of the leaves and bracts, and on the outer surface of the sepals. The upper surface of the blade is glabrous or has a few scattered hairs; the midrib on the upper surface is usually tawny-velutinous, at least in the lower third or fourth. The leaves vary in size and shape, but are mostly elliptic-oblong to lance-elliptic, 7.5–15 cm. long, 2.3–4.6 cm. broad, acute to acuminate, and usually conspicuously crenate. The crenations are usually mucronate-tipped. The petioles are 6–11 mm. long. The flowers are very fragrant, suggesting the odor of some orchids. The sepals are usually much hairier on the outer surface than those of typical *E. xylocarpa,* orange within, and green without in the center, with orange margins. The petals are of a bright flame-orange, while the filaments and stigmas are orange. The anthers are green; the ovary is green and covered with dense, tawny hairs. The styles are orange and at the base are usually covered with dense hairs, while in typical *E. xylocarpa* the styles are usually glabrous at the base.

The plant with all its vegetative and floral parts glabrous or practically so may be called:

Erblichia Standleyi Steyermark, sp. nov.—Arbor 7–27 m. alta; ramis juvenilibus glabris; foliis elliptico-oblongis, apice acutis vel acuminatis, in basin sensim attenuatis, chartaceis vel tenuiter subcoriaceis, utrinque ut etiam petiolis et costa media glabris, utroque latere 6–8-nerviis, petiolis 6–14 mm. longis, laminis 5–11.5 cm. longis, 2–3.7 cm. latis, marginibus late crenatis; bracteis glabris vel minute sparseque adpresso-pilosulis: pedunculis glabris; sepalis extus glabris vel minute sparse adpresso-pilosulis, 4.5–5 cm. longis, 0.9–1 cm. latis, lanceolatis vel lineari-lanceolatis, acuminatis; petalis flammeo-aurantiacis praeter basin intus tomentosam glabris, cuneato-rhomboideo-obovatis, apice cuspidatis, 6.5–7 cm. longis, ca. 4.5 cm. latis; filamentis utrinque basi dense puberulis, 4.3–4.5 cm. longis; antheris 4.5–5 mm. longis; stylis omnino glabris, 3.5–3.7 cm. longis; ovario omnino glabro; fructu juvenili glabro.—Mexico: Tabasco: "San Pedro," a tree 27 meters high, 70 cm. in diam., La Palma, Balancán, June 1–6, 1939, *E. Matuda* 3319.—Oaxaca: "Chamiso," a tree 22 meters tall, flowers pale reddish pink, in flood-free forest, alt. 30–90 meters, June, 1937, *Llewelyn Williams* 9460.—Honduras: Dept. Atlántida: A tree about 7 meters tall, flowers reddish orange, open forest along banks of Salado River, above the village of Salado, vicinity of La Ceiba, July, 1938, *T. G. Yuncker, J. M. Koepper & K. A. Wagner* 8323 (type in Herb. Field Mus.).

The styles entirely glabrous at their base, ovary and young fruit entirely glabrous from the beginning, and glabrous or practically glabrous sepals, leaves, petioles, peduncles, and young branchlets, all combine to distinguish this species from the other species and varieties described above. The lower surface of the bracts and outer surface of the sepals may have a few scattered, appressed hairs, but in the main are essentially glabrous. In general characters this species appears to be near the glabrate extremes of *E. xylocarpa*, but the specimens of the latter species which have been examined from British Honduras show densely fulvous-tomentose ovaries, young branches, and peduncles. While I have not examined the type (*Campbell* 33) of *Piriqueta xylocarpa* Sprague & Riley from British Honduras, all the specimens seen from that country possess a densely fulvous-tomentose ovary and young branchlets and peduncles, and it is assumed, therefore, that the Campbell specimen from British Honduras likewise would possess these characteristics. Sprague and Riley describe the capsule of the Campbell specimen as "juventute minute puberula," which leads to the assumption that the ovary was in the beginning covered with a denser coat of tomentum, as is characteristic of all the other British Honduras specimens that have been examined.

MYRTACEAE

Calyptranthes pendula Berg, Linnaea 27: 21. 1854.—At present the Mexican and Central American species of *Calyptranthes* are poorly understood, principally because of lack of ample herbarium material, and at best the differences between most of the species, as in so many of the Myrtaceae generally, are poorly marked. A single Guatemalan collection of the genus seems referable to *C. pendula* which was described from the mountains of Oaxaca, Mexico, and has been reported to range northward to Sinaloa. Guatemala: Dept. San Marcos, above Finca El Porvenir, south-facing slopes of Volcán de Tajumulco, alt. 1,400–1,700 meters, *Steyermark* 37253; a shrub of 4.5 meters; leaves chartaceous, rich green above, pale green beneath; flowers rose-purplish, with green calyces.

Eugenia cacuminum Standl. & Steyerm., sp. nov.—Frutex 3-metralis fere omnino glaber ut videtur dense ramosus, ramulis crassiusculis subteretibus ferrugineis vel brunneo-ochraceis, internodiis brevibus, novellis sparse minutissime puberulis vel fere glabris; folia parva breviter petiolata firme coriacea, petiolo crassiusculo 5–9 mm. longo glabro supra canaliculato; lamina glabra elliptico-oblonga vel lanceolato-oblonga prope medium latissima 4–7 cm. longa 1.5–2.3 cm. lata apicem angustum obtusum versus paullo angustata, basi obtusa vel acutiuscula, supra lucidissima viridis, costa venisque vix elevatis, subtus pallidior sat dense pellucido-punctata, costa tenera prominente, nervis lateralibus obscuris rectis irregularibus vix prominulis angulo latiusculo abeuntibus prope marginem irregulare junctis; flores axillares ut videtur (in statu fructifero tantum visi) solitarii vel fasciculati sessiles vel subsessiles; fructus globosus 7–8 mm. diam.

glaber in sicco profunde longitrorsum sulcatus lucidus; calyx ad apicem fructus persistens glaber, sepalis 4 rotundatis viridescentibus ciliolatis ca. 4 mm. longis incurvis et concavis.—Guatemala: Dept. Chiquimula: On ridge, Montaña Nube (Montaña Volcancitos), between Socorro Mountain and Cerro Brujo, southeast of Concepción de las Minas, alt. 1,500–1,700 meters, October 31, 1939, *Julian A. Steyermark* 30903 (type in Herb. Field Mus.); leaves firmly membranaceous when fresh, dark green above, pale beneath.

Well marked by the small, very lustrous and discolorous leaves, and especially by the sessile or nearly sessile fruits which in the dry state are deeply sulcate vertically.

Eugenia chiquimulana Standl. & Steyerm., sp. nov.—Arbor 6-metralis, ramulis vetustioribus cinereis rimosis, junioribus canobrunnescentibus ad nodos in sicco aliquanto compressis et sparse minute puberulis, internodiis elongatis; folia majuscula petiolata coriacea, petiolo 9–13 mm. longo crasso minute cinereo-tomentello vel glabrato; lamina oblonga vel elliptico-oblonga 9–10.5 cm. longa 4–4.5 cm. lata, obtusa vel subacuta, apice ipso obtuso, basi acutiuscula vel obtusa, in statu adulto glaberrima, supra in sicco lucida brunnescens, costa anguste subimpressa, nervis prominulis, subtus pallidior brunnescens sublucida dense minute punctata, costa tenera elevata, nervis lateralibus utroque latere ca. 12 tenerrimis fere rectis angulo lato adscendentibus prope marginem in nervum distinctum collectivum irregularem conjunctis, venis prominulis sed inconspicuis laxe reticulatis; fructus magnus subglobosus 2–2.5 cm. diam. basi et apice rotundatus, tomento molli densissimo brunneo obtectus; sepala ad apicem fructus persistentia 4 rotundo-ovata obtusissima ca. 5 mm. longa extus brunneo-tomentella vel glabrata.—Guatemala: Dept. Chiquimula, cloud forest near the summit of Volcán de Quezaltepeque, 3–4 miles northeast of Quezaltepeque, alt. 2,000 meters, November 8, 1939, *Julian A. Steyermark* 31453 (type in Herb. Field Mus.).

Leaves coriaceous, grass-green above, silvery green beneath; fruit covered with dull brown hairs. The fruits are separated from the branches, and the form of the inflorescence can not be determined satisfactorily. The species is similar to some of those described from Honduras, but does not agree in essential details with any one of them. The very large, densely tomentose fruits and the large, lustrous leaves are conspicuous characters.

Eugenia musarum Standl. & Steyerm., sp. nov.—Frutex 2.5 m. altus omnino glaber, ramis gracilibus ferrugineis, acute vel obtuse tetragonis ad nodos incrassatis, internodiis elongatis; folia magna breviter petiolata crasse membranacea, petiolo crasso 4-6 mm. longo supra late canaliculato; lamina anguste oblonga vel lanceolato-oblonga medio latissima 15-20 cm. longa 4.5-6.5 cm. lata sensim vel subabrupte longiacuminata, acumine angusto subobtuso, basi obtusissima vel anguste rotundata, supra in sicco griseo-viridis, costa anguste subimpressa, nervis venisque non elevatis inconspicuis, subtus pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 15 tenerrimis prominentibus angulo semirecto vel saepius latiore adscendentibus remote a margine in nervum collectivum tenuem irregularem conjunctis, venis fere obsoletis; flores ad nodos defoliatos fasciculati pauci subsessiles; hypanthium late hemisphaericum punctatum ca. 3 mm. altum basi late rotundatum; sepala 3-3.5 mm. longa rotundo-ovata apice rotundata ciliolata remote punctata pallida; petala obovato-orbicularia 6 mm. longa et fere aequilata; stamina numerosissima; stylus gracillimus glaber fere 10 mm. longus. —Guatemala: Dept. Izabal: Río Juyamá, southeast of Cheyenne, about 15 miles southwest of Bananera, alt. 50-100 meters, April 8, 1940, *Julian A. Steyermark* 39165 (type in Herb. Field Mus.).

Leaves when fresh firmly membranaceous, rich, dull green above, pale green beneath; calyx lobes spreading, greenish white; petals white. The most closely related species of Central America is *Eugenia lancetillae* Standl., which has somewhat pubescent leaves, with more prominent and differently disposed venation, and acute or narrowly obtuse at the base.

Eugenia simiarum Standl. & Steyerm., sp. nov.— Arbor omnino glabra, ramis gracilibus rectis rigidis brunneis ad nodos paullo incrassatis, internodiis brevibus vel elongatis; folia inter majora breviter petiolata subcoriacea, petiolo crasso 7-9 mm. longo; lamina anguste oblongo-lanceolata prope vel paullo infra medium latissima 16-19 cm. longa 4.5-5.5 cm. lata apicem versus longe sensim angustata, apice ipso angusto obtuso, basi acuta, supra in sicco griseo-viridis opaca, costa nervisque prominulis, venis quoque prominulis laxe reticulatis, subtus pallidior, costa tenera elevata, nervis lateralibus utroque latere ca. 15 teneris prominentibus angulo lato divergentibus fere rectis remote a margine in nervum collectivum crenatum junctis, venulis inconspicuis vix prominulis laxe reticulatis; flores in axillis foliorum vel ad nodos defoliatos fasciculati pauci vel, numerosi, pedicellis 8-14 mm. longis plerumque rectis gracilibus; hypanthium 2.5 mm. longum dense grosse glanduloso-punctatum; sepala semiorbicularia vel rotundo-ovata 1.5-2 mm. longa apice late rotundata sparse ciliolata dense punctata; petala alba grosse glanduloso-punctata ca. 5 mm. longa; bracteolae 1–1.5 mm. longae basi hypanthii insertae ovatae vel lanceolatae obtusae vel acutae.—Guatemala: Dept. Izabal: Between Bananera and La Presa, in Montaña del Mico, alt. 40–300 meters, March 28, 1940, *Julian A. Steyermark* 38274.

Leaves when fresh firmly chartaceous, rich green above, pale green beneath; pedicels light green; petals white; calyx lobes pale green. *Eugenia simiarum* is similar to *E. lancetillae* Standl., of the Atlantic coast of Honduras. The latter differs in having somewhat pubescent leaves with differently arranged, more elevated venation, and almost sessile flowers. *E. musarum*, described above, also is closely related, but has angled branches, leaf blades obtuse at the base, and much larger, short-pedicellate flowers.

Eugenia Steyermarkii Standl., sp. nov.—Arbor 15-metralis, ramis teretibus subferrugineis rimosis, novellis in sicco plus minusve compressis ferrugineis primo densiuscule sericeis cito glabratis, internodiis plerumque elongatis; folia modica breviter petiolata crasse coriacea, petiolo crasso 3–5 mm. longo primo sericeo, glabrescente; lamina late elliptica vel rotundo-elliptica 4–6 cm. longa 2–3.5 cm. lata apice obtusa usque rotundata, interdum subemarginata, basi acutiuscula usque fere rotundata, saepe abrupte breviter contracta, primo ut videtur sparse denseve adpresso-pilosa, saltem in statu adulto omnino glabra, supra pallide lutescens lucida, costa anguste profundeque impressa, nervis vix manifestis non elevatis, sparse punctata, subtus paullo pallidior, costa elevata, nervis lateralibus utroque latere ca. 12 tenerrimis fere rectis angulo recto vel paullo angustiore abeuntibus, venis obscuris; flores ut videtur in axillis solitarii, pedunculo puberulo ca. 5 mm. longo, pedicello paullo breviore; fructus siccus globosus 12 mm. diam. sparse puberulus vel glabratus; sepala ad apicem fructus persistentia crassa oblonga obtusa ca. 4 mm. longa.—Guatemala: Dept. San Marcos, between La Vega ridge along Río Vega and northeast slopes of Volcán de Tacaná, to 3 miles from Guatemala-Mexico boundary, vicinity of San Rafael, alt. 2,500–3,000 meters, February 20, 1940, *Julian A. Steyermark* 36210 (type in Herb. Field Mus.).

"Leaves firmly chartaceous, dark green above, pale green beneath." The species is a well marked one, noteworthy for its rather small, very broad, coriaceous leaves, and for the large, coriaceous calyx lobes. It is not altogether certain that the peduncles are 1-flowered, but they appear to be so.

MELASTOMACEAE

Conostegia Gleasoniana Standl. & Steyerm., sp. nov.—Frutex 2–3-metralis, ramis gracilibus vel crassiusculis, vetustioribus ferrugineis vel brunnescentibus glabratis teretibus, novellis dense pilis parvis sessilibus brunnescentibus vel ochraceis tomentosis, pilis aliis longis apice stellato-ramosis interdum intermixtis, internodiis plerumque brevibus; folia modica petiolata membranacea, petiolo gracili 1.5–3 cm. longo arcte stellato-tomentello vel glabrato, interdum cum pilis stellatis longistipitatis quoque consperso; lamina oblongo-lanceolata vel anguste elliptico-oblonga 8–20 cm. longa 3.5–6.5 cm. lata, apice acuta usque longe angusteque attenuata, basi acuta vel obtusa, fere integra vel remote obscure undulato-crenata, supra in sicco fuscescens vel lutescens vulgo minute pallido-puncticulata, interdum saltem in juventute sparse setoso-pilosa sed saepius fere omnino glabra, costa nervisque non elevatis, subtus fere concolor viridis sparse minuteque saltem ad costam venasque pilis minutis sessilibus stellatis conspersa, secus costam interdum pilis stellatis stipitatis onusta, 5-plinervia, pare superiore nervorum bene supra basin laminae nascente, nervis teneris prominentibus, venis tenerrimis prominulis laxe reticulatis; paniculae terminales sessiles et a basi ramosae vel breviter pedunculatae dense vel sublaxe multiflorae vulgo 5–7 cm. longae et fere aequilatae, ramis crassiusculis pilis sessilibus vel stipitatis et saepe cum ambobus intermixtis sparse denseve obsitis, suberectis vel adscendentibus, floribus vulgo in cymulas parvas trifloras breviter pedunculatas dispositis breviter crasseque pedicellatis; calyx in alabastro ovoideus vel ellipsoideus 4–5 mm. longus, basi acutiusculus, apice angustatus et apiculatus vel acutiusculus, sparse minuteque stellato-puberulus.—Guatemala: Dept. Alta Verapaz: Damp forest, limestone region of Cocolá, northeast of Carchá, alt. 1,200 meters, April 2, 1939, *Paul C. Standley* 70317 (type in Herb. Field Mus.). Mountains east of Tactic, on the road to Tamahú, alt. 1,500–1,600 meters, April 9, 1939, *Standley* 71078, 71086, 71305, 71329.

Among Guatemalan species of *Conostegia*, the present one is noteworthy for its small flowers. While the specimens exhibit some variation in pubescence, all appear to be conspecific. The pubescence of the leaves is scant, and at maturity the blades are, in fact, almost glabrous.

Mouriria Gleasoniana Standl., sp. nov.—Arbuscula vel arbor usque 12 m. alta saltem praeter flores omnino glabra, ramulis gracilibus sed rigidis vulgo cinnamomeis subteretibus rimosis, internodiis plerumque elongatis; folia mediocria brevissime petiolata in sicco coriacea et rigida, petiolo crasso vix ultra 3 mm. longo crasso; lamina oblonga vel lanceolato-oblonga 7.5–10 cm. longa 3–3.5 cm. lata subabrupte acuta vel breviter acuminata, basi paullo breviterque angustata et anguste rotundata, saepius emarginata, utrinque dense papilloso-pustulata, supra lutescens, costa non elevata, nervis obscuris, subtus paullo pallidior, costa crassiuscula elevata, nervis vulgo obscuris tenerrimis vix elevatis; pedunculi axillares plerumque solitarii ca. 1 cm. longi infra medium geniculati minute puberuli vel glabrati graciles; calyx 5–6 mm. latus, extus ut videtur sparse puberulus vel fere glaber, tubo basi late rotundato, limbo patente brevissime lobato persistente; fructus depresso-globosus et saepius didymus glaber ca. 13–14 mm. latus basi late rotundatus, seminibus 1–3.—Mexico: Achotal, Balancán, Tabasco, May, 1939, *E. Matuda* 3093 (type in Herb. Field Mus.). San Isidro, Balancán, Tabasco, June, 1939, *Matuda* 3339. Uvero, Oaxaca, alt. 30–90 meters, May, 1937, *L. Williams* 9398.—Guatemala: Dept. Izabal, Río Dulce, 2–4 miles west of Livingston, on south side (left side going up river), at sea level, April 16, 1940, *Steyermark* 39525; sterile; a shrub of 1–2 meters.

Regarding the tree Mr. Williams supplies the following notes: "Local name Frutillo. A tree 12 m. tall, the crown spreading; trunk straight, round, 25 cm. in diameter, unbranched for 4.5 m.; fruit yellow when unripe, reddish when mature, ripening in May. Wood used for railroad ties. Common on hill slopes in forest." Mr. Matuda states that the plant is a tree of 4–5 meters.

The new species is named for Dr. H. A. Gleason, student and monographer of the Melastomaceae. It is clearly related to *Mouriria Muelleri* Cogn., and the two Tabasco specimens have been so determined. *M. Muelleri* is represented in the Herbarium of Field Museum by a photograph of the type, *Jurgensen* 266 from the State of Oaxaca. As shown by this photograph, the leaves of *M. Muelleri* are decidedly different from those of *M. Gleasoniana*, being very obtuse or narrowly rounded at the apex and broad and more conspicuously emarginate at the base. The only *Mouriria* material in the Herbarium of Field Museum that resembles the type photograph is *Haenke* 1626, without locality but presumably from western Mexico. It is, however, by no means certain that this specimen really represents *Mouriria Muelleri*.

The most common *Mouriria* species of British Honduras and northern Guatemala, *M. exilis*, differs from *M. Gleasoniana* in having more evidently petiolate leaves acute or acutish at the base.

ONAGRACEAE

Fuchsia Seleriana Loes. Verh. Bot. Ver. Brandenb. 55: 179. 1913.—Most of the small-flowered Fuchsias of Mexico and Central America are much alike and closely related. The species have been based too often on characters that appear to be of little importance or stability, and it seems certain that as material accumulates in herbaria, at least some of the names will have to be reduced to synonymy. *Fuchsia Seleriana,* however, is better marked than most of its relatives, and apparently a perfectly good species. The type was collected near Chaculá in the Department of Huehuetenango, Guatemala, and another collection from the Department of Quezaltenango was cited by Loesener. The species is noteworthy in having dioecious flowers. Guatemala: Dept. Jalapa: Cerro Alcoba, just east of Jalapa, alt. 1,300–1,700 meters, *Steyermark* 32512; a shrub of 1–1.5 meters; leaves membranaceous, dull green above, silvery green beneath; stems purplish red; berries purplish red; corolla rose-orchid, the lobes orchid-colored outside, tinged with pale pink or white inside.—Dept. Guatemala: Santa Catarina Pinula, *Margaret Lewis* 892.—Dept. Sacatepéquez: Oak forest, Finca El Hato, northeast of Antigua, alt. 2,000 meters, *Standley* 61202; a shrub of 2 meters; flowers bright red.—Dept. Chimaltenango: Oak woods, plains near Tecpám, *Skutch* 489; a low shrub, rarely 2.5 meters high; flowers pinkish red; berries glossy black, almost 1 cm. in diameter. Tecpám, *J. R. Johnston* 761a.—Dept. Quezaltenango: Hedgerow near Quezaltenango, alt. 2,400 meters, *Skutch* 810. Volcán de Santa María, between Santa María de Jesús, Las Mojadas, and summit of the volcano, alt. 1,500–3,000 meters, *Steyermark* 34031; a shrub of 1.5–2.5 meters. At present the species is known definitely only from Guatemala, but *Sessé & Mociño* 5207 has been annotated by Dr. P. A. Munz as being probably *Fuchsia Seleriana.* Most of the Sessé and Mociño plants came from Mexico, but it is known or at least believed that those collectors visited Guatemala, and they are reported to have prepared a manuscript flora of the latter country.

ARALIACEAE

Sciadodendron excelsum Griseb. Bonplandia 6: 7. 1858.—Originally described from Panama, this small tree has been known to extend along the Pacific coast as far north as Salvador. It may now be reported even farther northward, from Guatemala: Dept. Chiquimula: Rocky outcrops along gorge of Río Chiquimula, between Santa Bárbara and Petapilla, 4–6 miles north of Chiquimula, alt.

350–420 meters, *Steyermark* 30271; a tree of 7.5 meters, most of the leaves borne at the top of the trunk.

UMBELLIFERAE

Hydrocotyle pusilla A. Rich. Ann. Sci. Phys. 4: 167. *pl. 52, f. 2.* 1820. *H. costaricensis* Rose, Journ. Wash. Acad. Sci. 17: 195. 1927.—In Central America this species has been recorded, so far as we know, only from Costa Rica, where it has been collected several times. It is widely dispersed in South America and West Indies, and Mathias (Brittonia 2: 206. 1936) cites its range as extending to Mexico. The following collections may be placed on record for Guatemala: Dept. Jalapa: Vicinity of Soledad, Montaña Miramundo, between Jalapa and Mataquescuintla, alt. 2,000–2,500 meters, creeping along brook among hepatics, *Steyermark* 32665. Potrero Carrillo, at Hierba Buena, 14 miles northeast of Jalapa, alt. 1,500–1,900 meters, creeping in wooded swamp on moist knolls, *Steyermark* 33042.—Dept. Chimaltenango: Near Río Pixcayó, between Chimaltenango and San Martín Jilotepeque, alt. 1,650–1,800 meters, creeping along a ditch, *Standley* 64334; creeping at edge of stream, *Standley* 64444.—Dept. San Marcos: Along road between San Sebastián at km. 21 and km. 8, 8–18 miles northwest of San Marcos, alt. 2,700–3,800 meters, creeping over wet rocks near base of a waterfall, *Steyermark* 35733.—Dept. Alta Verapaz: Mountains east of Tactic on road to Tamahú, creeping in dense, wet forest, alt. 1,600 meters, *Standley* 71224. The plant is rare or local in Guatemala, in contrast with *Hydrocotyle mexicana* Cham. & Schlecht., which grows almost everywhere in forests of middle and higher elevations.

Hydrocotyle ranunculoides L. f. Suppl. Pl. 177. 1781.—In Rose and Standley's account of the genus *Hydrocotyle* in Central America (Journ. Wash. Acad. Sci. 17: 194. 1927), *H. ranunculoides* was reported from Nicaragua, Costa Rica, and Panama. A few Guatemalan collections, all unfortunately sterile, are available from recent collections: Dept. Quezaltenango: Olintepeque, edge of river, common, alt. 2,415 meters, *Standley* 66004.—Dept. Chimaltenango: Finca La Alameda, near Chimaltenango, alt. 1,830 meters, floating in a small stream, *Standley* 59161; leaves very lustrous in the fresh state. Near Parramos, alt. 1,650–1,800 meters, *Standley* 59871.

ERICACEAE

Anthopterus Wardii Ball in Hook. Icon. 15: *pl. 1465.* 1884.—Of this rather curious plant, noteworthy for its 5-winged corolla, but a single collection was reported from North America by Albert C. Smith in his account of the Thibaudieae (Contr. U. S. Nat. Herb. 28: 408. 1932), *Pittier* 5652 from Cerro de Garagará, Darién, Panama. A second collection has now come to hand, from the same region: Crest, Cana–Cuasi trail, Prov. Darién, alt. 1,650 meters, February, 1940, *M.E. & R. A. Terry* 1569. "A shrub or tree(?). Calyx scarlet, the corolla white."

Disterigma panamense Standl., sp. nov.—Fruticulus epiphyticus sparse ramosus, ramis gracilibus usque 20 cm. longis nodosis subteretibus ferrugineis, internodiis brevibus, novellis dense pilis albidis patulis hispidulis; petioli subnulli; laminae patentes lineari-oblongae tenues 8–12 mm. longae 2.5–3 mm. latae acutiusculae, basi obtusae, sparse puberulae vel fere glabrae, integrae vel obsolete serrulatae, e basi trinerviae, sparse fusco-punctatae, marginibus tenuibus pallidis, nervis subtus prominulis vel saltem manifestis; flores breviter pedicellati vel subsessiles, bracteis inaequalibus stramineis striatis fere glabris, interioribus late ovalibus apice rotundatis usque 2.5 mm. longis, exterioribus late ovatis obtusis vel acutiusculis multo brevioribus; calyx fere glaber, lobis 4 acutis vel acutiusculis 2 mm. longis rigidis ciliatis; corolla glabra alba 5 mm. longa, tubo cylindraceo crassiusculo, lobis 4 triangularibus acutis suberectis; stamina corollam subaequantia, stylo aequilongo.—Panama: Rain forest, Cana–Cuasi trail, Chepigana District, Prov. Darién, Panama, alt. 1,650 meters, March 15, 1940, *R. A. & M. E. Terry* 1564 (type, in Herb. Field Mus.).

Only time and further material will tell whether this is sufficiently distinct from the common South American *Disterigma empetrifolium* (HBK.) Drude to deserve specific status. Certain not too well marked structural characters and the distributional factors lead one to believe that it probably is distinct. *D. empetrifolium*, ranging in the Andes from Venezuela to Peru, occurs at 2,000 to 4,200 meters, a much greater elevation than that at which the Panama plant grows. The leaves of *D. panamense* are thinner, narrower, and more distinctly 3-nerved than those of *D. empetrifolium*, and they are widely divaricate rather than erect or ascending. The corolla, too, is somewhat smaller than in any or most of the South American collections.

SAPOTACEAE

Bumelia LeSueurii Standl., sp. nov.—Arbor, ramis crassiusculis nigrescentibus vel fusco-ferrugineis longitrorsum et interdum quoque transverse rimosis sparse spinosis, novellis densissime pilis

brunneis lucidis patulis pilosis, internodiis brevibus; spinae rigidae adscendenti-divaricatae 8–12 mm. longae; folia parva breviter petiolata subcoriacea vel rigide membranacea, petiolo crassiusculo 4–6 mm. longo dense patulo-piloso; lamina oblonga vel anguste oblonga 4.5–6.5 cm. longa 1.5–2.3 cm. lata, obtusa vel apice rotundata, basi obtusa vel anguste rotundata, rarius subacuta, supra in sicco cinereo-viridis glabra, minute pallido-puncticulata, nervis venisque prominulis atque reticulatis, subtus fere concolor ubique pilis brevibus pallidis brunnescentibus patulis e basi furcatis plus minusve intertextis pilosa, costa tenera prominente, nervis lateralibus prominulis remotis angulo lato abeuntibus; flores in axillis foliorum paucifasciculati vel interdum ut videtur singuli, pedicellis crassiusculis 3–4 mm. longis dense brunneo-tomentosis; sepala ovalia vel ovali-ovata 3.5 mm. longa extus dense brunneo-sericea apice obtusa vel rotundata, intus glabra; corolla extus glabra, lobis ut videtur in vivo reflexis oblongis obtusis 3 mm. longis; staminodia majuscula lineari-lanceolata attenuato-acuminata glabra breviter exserta, antheris oblongis breviter exsertis; stylus crassiusculus sepalis duplo longior glaber, ovario dense piloso.—Mexico: Río Bonito, Chihuahua, December, 1936, *Harde LeSueur* 1160 (type in Herb. Field Mus.).

Bumelia lanuginosa (Michx.) Pers., which extends from Texas into Tamaulipas, Coahuila, and Nuevo León, seems to be the closest relative of the tree here described. It differs, however, in having more or less cuneate leaves, numerous flowers on more elongate pedicels, broad corolla lobes, and a short, included style.

Chrysophyllum panamense Pittier, var. **macrophyllum** Standl., var. nov.—Folia magna, petiolo crasso 12–25 mm. longo; lamina ovalis usque late elliptica vel late elliptico-oblonga vulgo 20–33 cm. longa et 10–13.5 cm. lata, breviter cuspidato-acuminata, basi subtruncata usque acutiuscula, subtus aliquanto pallidior sparse minuteque sericea vel fere glabra; corolla sparse vel dense sericea; fructus quam in forma typica speciei major, seminibus vulgo 4, interdum 1–3 vel 5.—Panama: Barro Colorado Island, Canal Zone: Near Laboratory, Snyder-Molino Trail, September 3, 1937, *James Zetek* 3810 (type in Herb. Field Mus.); March 19, 1937, *Zetek* 3810. Wheeler Trail, July, 1931, *D. E. Starry* 118. Snyder-Molino Trail, March 5, 1932, *Otis Shattuck* 778.

Excellent material of this *Chrysophyllum* has been forwarded by Mr. Zetek, who believes that it constitutes a new species, distinct from *C. panamense*, which possibly may be the case. It differs from the typical form of the species in its substantially larger leaves and in its larger fruits with more numerous seeds. What is taken to be the typical form of *C. panamense* has normally one seed in each fruit, but sometimes two. The number of seeds probably is variable, and there is no well marked difference in leaf size, while the flowers appear to be identical in the two forms. It therefore seems necessary to regard the large-leafed tree as only a variety of *C. panamense*.

Lucuma Austin-Smithii Standl., sp. nov.—Arbor 12-metralis, trunco 30 cm. diam., ramulis crassiusculis primo densissime brunneo-sericeis, serius glabratis, internodiis brevibus; folia majuscula petiolata tenuiter coriacea, petiolo gracili 1.5–2 cm. longo dense brunneo-sericeo vel glabrato; lamina obovato-oblonga vel oblanceolato-oblonga, interdum elliptico-oblonga, 10–17 cm. longa 4–7.5 cm. lata, apice acuta vel subacuminata usque rotundata, basi acuta vel interdum cuneato-angustata, supra in sicco sublucida fusco-brunnescens, primo dense brunneo-sericea sed cito glabrata et in statu adulto omnino glabra, costa nervisque non elevatis, nervulis prominulis atque arcte reticulatis, subtus multo pallidior, in statu juvenili densissime brunneo-sericea, in statu adulto ubique pilis arcte adpressis brunnescentibus et griseis sat dense sericea, costa crassiuscula prominente, nervis lateralibus utroque latere ca. 16 prominentibus teneris subarcuatis angulo lato divergentibus juxta marginem arcuato-junctis, venulis inconspicuis sed prominulis et arcte reticulatis; flores axillares solitarii vel geminati, pedicellis gracilibus rectis 9–11 mm. longis dense brunneo-sericeis; sepala 4, 2 exterioribus florem involventibus late ovalibus 7 mm. longis apice rotundatis vel obtusissimis extus dense minuteque brunneo-sericeis, interioribus 2 conformibus et aequilongis extus fere glabris, intus glabris; ovarium densissime villosum, stylo glabro crassiusculo recto 3.5 mm. longo.—Costa Rica: La Peña de Zarcero, Cantón Alfaro Ruiz, Prov. Alajuela, alt. 1,575 meters, in cloud forest of Caribbean watershed, October 22, 1938, *Austin Smith* H1280 (type in Herb. Field Mus.).

"Trunk erect, 30 cm. in diameter at the base. Bark dark cinnamon-brown. Leaves thinly coriaceous, rigid, faintly shining, dark green above, buff-green on the lower surface; outer sepals bronzy green, the inner ones pale yellowish. The tree emits a sticky, milky sap."

Lucuma Durlandii Standl. Trop. Woods 4: 5. 1925.—The tree has been collected numerous times in Petén, Guatemala, whence originally described, as well as in British Honduras. Three recent collections indicate a much wider range for it: Guatemala: Dept. Izabal, bay of Santo Tomás, between Escobas and Santo Tomás,

at sea level, *Steyermark* 39228; a tree; leaves firmly chartaceous, dark green above, pale grass-green beneath; flowers white.—Mexico: La Palma, Balancán, Tabasco, in virgin forest, *Matuda* 3297 (determined by Lundell); a small tree with green fruits. Tamazunchale, San Luis Potosí, in forest on hillside, alt. 300 meters, *C. L. & Amelia A. Lundell* 7199; a tree of 12 meters, the trunk 15 cm. in diameter; corolla white.

Sideroxylon Steyermarkii Standl., sp. nov.—Arbor 7–9-metralis, ramulis crassis subteretibus fusco-ferrugineis longitrorsum rugosis, novellis sparse denseve pilis cinereis et brunnescentibus intermixtis sericeis, cito glabrescentibus, internodiis brevibus; folia modica vel magna breviter petiolata subcoriacea et subrigida, petiolo crassiusculo 1–2 cm. longo sparse sericeo vel glabrato; lamina oblanceolato-oblonga vel obovato-oblonga 10–21 cm. longa 3.5–9.5 cm. lata, apice obtusa vel saepius rotundata, basin versus arcuato-angustata vel cuneato-angustata, basi ipsa cuneato-acuta, supra in sicco viridis glabra, costa subimpressa, nervis planis, subtus paullo pallidior, primo sparse pilis arcte adpressis griseis sericea, serius glabrata, costa gracili elevata, nervis lateralibus utroque latere 9–14 teneris subarcuatis prominentibus angulo latiusculo adscendentibus juxta marginem sursum curvatis et junctis, venis prominulis inconspicuis laxe reticulatis; flores e nodis nudis infra folia nascentes fasciculati, pedicellis fructiferis crassis angulatis glabratis 1.5–2 cm. longis; sepala ca. 6 inaequalia arcte imbricata brunnescentia glabra vel glabrata 2.5–3 mm. longa apice obtusa usque subrotundata; stylus crassus sursum attenuatus ca. 2 mm. longus; fructus monospermus late ovoideus glaber in sicco lucidus ca. 2 cm. longus et 1.5 cm. latus, sessilis et basi rotundatus, apice subacutus; semen laeve ca. 1.5 cm. longum pallide lutescens.—Guatemala: Dept. Quezaltenango: Quebrada Canalá, along Río Samalá between Santa María de Jesús and Calahuaché, alt. 1,200–1,300 meters, January 9, 1940, *Julian A. Steyermark* 33858 (type in Herb. Field Mus.); local name Cacho de venado; a tree with milky sap; leaves coriaceous, stiff, dark green above, pale green beneath, the nerves prominent; fruit green, about 2 cm. long and 1.5 cm. broad, pointed at the apex, turbinate, dull olive-green.—Dept. Suchitepéquez: Southern, lower slopes of Volcán de Zunil, vicinity of Finca Las Nubes, along Quebrada Chita, east of Pueblo Nuevo, alt. 500–800 meters, February 2, 1940, *Steyermark* 35409; leaves dark, rich green above, pale green beneath.

Although corollas are absent, from the general appearance of the flowers and foliage, this tree appears almost certainly referable to the genus *Sideroxylon.* In that group it is well marked by its very obtuse or rounded, rather short-petiolate leaves.

PRIMULACEAE

Centunculus minimus L. Sp. Pl. 116. 1753.—As limited by Pax and Knuth (Pflanzenreich IV. 237: 334. 1905), the genus *Centunculus* consists of a single species, *C. pentandrus* R. Br., reported from various parts of Mexico and Central America, being referred by those authors to the synonymy of *Anagallis pumila* Sw. *C. minimus* has a wide range in both the eastern and western hemispheres, but is not recorded, so far as available literature indicates, from Central America. Two collections have been made in Guatemala: Dept. San Marcos: Along Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, marshy, open meadow, alt. 2,200-2,500 meters, *Steyermark* 35972. Along road between San Sebastián at km. 21 and km. 8, 8-18 miles northwest of San Marcos, alt. 2,700-3,800 meters, in spring-fed meadow along a quebrada, *Steyermark* 35594.

Lysimachia Steyermarkii Standl., sp. nov.—Herba ut videtur adscendens vel decumbens, caule elongato crasso ad nodos radicante, caulibus ultimis erectis 16-19 cm. longis simplicibus ochraceis ut videtur subcarnosis, glabris vel superne sparse pilis longis patentibus villosis; folia alterna petiolata membranacea, petiolo 4-15 mm. longo crasso saepe rubro vel purpurascente submarginato sparse villoso; lamina late ovata usque elliptica vel lanceolato-elliptica 3-6 cm. longa 1.5-2.5 cm. lata acuta vel subacuminata, basin versus plus minusve angustata, interdum contracta et decurrens, basi saepius acuta vel subobtusa, supra viridis sparse villosa vel fere glabra, subtus paullo pallidior, sparse villosa vel fere glabra, dense punctata, costa crassiuscula, nervis paucis inconspicuis valde obliquis angulo angusto adscendentibus; flores in axillis foliorum supra medium caulis fasciculati, pedicellis gracillimis 1.5-2 cm. longis rectis vel flexuosis sparse villosis; sepala in statu fructifero 5 mm. longa persistentia oblongo-lanceolata acuta vel acuminata dense punctata unicostata fere libera; capsula sepalis aequilonga glabra, valvis lanceolato-oblongis.—Guatemala: Dept. Quezaltenango: Moist, steep banks at base of rocky cliff, Volcán de Zunil, alt. 2,500-3,800 meters, January 22, 1940, *Julian A. Steyermark* 34772 (type in Herb. Field Mus.).

Although the genus is rather well represented in the United States, but one species has been reported in North America south of the Mexican border, *L. mexicana* Knuth, of the mountains of

Oaxaca, Mexico. *L. Steyermarkii* is related to that and to its ally, *L. chilensis* (Griseb.) Knuth, of southern Chile, but it differs from both in its sessile rather than long-pedunculate fascicles of flowers. Its leaves, too, are relatively much broader than those of *L. mexicana.*

GENTIANACEAE

Lisianthus arcuatus Perkins, Bot. Jahrb. 31: 492. 1902.—Heretofore the species has been recorded definitely only from Costa Rica, but a not very recent collection that has lain in the herbarium without study until now attests its occurrence also in Honduras: Cuyamel, on hills, March, 1924, *M. A. Carleton* 584. The corollas are slightly shorter than those of most Costa Rican specimens, but otherwise the plants are all alike.

APOCYNACEAE

Zschokkea Standleyi Woodson in Standl. Bot. Ser. Field Mus. 22: 44. 1940. *Lacmellea edulis* Woodson, N. Amer. Fl. 29: 141. 1938, non Karst.—An attempt to determine a recent Steyermark collection, cited below, has resulted, it is believed, in clarifying the status of the so-called *Lacmellea* several times reported from British Honduras. *Lacmellea edulis* Karst. was described from the Río Meta, Colombia, and the senior author some years ago made the mistake of referring to the same species material collected on Barro Colorado Island, Panama, later described by Woodson as *Zschokkea panamensis.* Woodson's studies showed also that the British Honduras specimens determined by the senior author as *Lacmellea edulis* really belonged to that Colombian species. It always has seemed strange that the Colombian plant should skip across all of Central America to appear in British Honduras. Some species do have such an interrupted distribution, so far as present records indicate, but in their cases there are no closely related species found at intervening localities.

Study of the available material of so-called *Lacmellea,* including that of the Missouri Botanical Garden Herbarium, kindly lent for study by Dr. J. M. Greenman, shows that actually it is identical with the species described by Dr. Woodson in 1940 as *Zschokkea Standleyi.* All the British Honduras material previously available bore only buds, with no developed corollas. As *Zschokkea* and *Lacmellea* have been separated, the former has relatively short corolla lobes, much shorter than the tube, and the anthers are inserted near the top of the tube; in *Lacmellea* the corolla lobes about equal the tube, and the anthers are inserted near the middle of the tube. In the undeveloped corollas of the British Honduras tree, the corolla tube is at first short, and the anthers *are* borne near its middle; but, when the corolla is ready to open, as shown by the Guatemalan specimens cited below, the tube has become much longer, and the anthers, although they have actually maintained their former position, are now near the apex of the elongate tube.

From all this it seems clear that the material cited below from Guatemala and British Honduras is congeneric and conspecific, that it is not *Lacmellea edulis*, and that the proper name for it is *Zschokkea Standleyi* Woodson. However, there are further complications of the subject, which can not be resolved at the present time. If one consults Karsten's plate of *Lacmellea edulis* (Fl. Columb. *pl. 152*), there immediately arises a suspicion that he also may have dealt with material with only young and incompletely developed corollas. Both the habit sketch and the flower dissections lead one to suspect as much. Unfortunately, no South American material of *Lacmellea* is available to the writers, but they will not be surprised if ultimately *Lacmellea* and *Zschokkea* prove to be congeneric. That would be unfortunate, since the name *Lacmellea* antedates *Zschokkea*, and under the latter genus a good many species have been described.

The following material of *Zschokkea Standleyi* is now at hand: Guatemala: Dept. Izabal: In pasture near Entre Ríos, common, alt. 18 meters, April, 1939, *Standley* 72587, type of *Z. Standleyi;* a tree of 4.5–6 meters; corolla cream-colored. Between Virginia and Lago de Izabal, Montaña del Mico, alt. 50–500 meters, April 5, 1940, *Steyermark* 38886; a tree of 11 meters; leaves subcoriaceous, dark, rich green above, pale grass-green beneath; calyx tube green; corolla tube greenish white, swollen at the base; the lobes white.—British Honduras: Río Blanco, April, 1929, *N. S. Stevenson* 120 (Yale School For. 14902); a sterile specimen; local names Palo de vaca and Cow tree; a small tree. Río Grande, in river swamp, alt. 15 meters, *Schipp* 1234; a tree of 9 meters; fruit yellow; wood soft; latex white. Temash River, alt. 30 meters, in swamp forest, February 18, 1935, *Schipp* 1326; local name Vaca; a tree of 9 meters; flowers creamy white; the trunk has woody spines; the latex is good to drink but a bit tacky. Without definite locality, *J. B. Kinloch* 11; local name Prickly vaca.

CONVOLVULACEAE

Ipomoea Davidsoniae Standl. Bot. Ser. Field Mus. 22: 98. 1940.—A second and better preserved specimen of this recently described species has been received: Panama: Near Camiseta, Volcán de Chiriquí, Boquete District, Prov. Chiriquí, alt. 2,100 meters, February, 1940, *M. E. Terry* 1368. "Corolla pale lavender at the margin, the throat deep lavender or purple." The peduncles equal or exceed the leaves, being 6–8 cm. long, and they bear few or numerous, densely congested flowers, which are either sessile or borne on short, stout pedicels.

Jacquemontia pinetorum Standl. & Steyerm., sp. nov.—Ut videtur fruticosa, ramosa, ramis crassis fusco-ferrugineis subteretibus, novellis dense velutino-pilosis, pilis patulis sordidis, internodiis brevibus vel elongatis; folia parva longipetiolata herbacea, petiolo gracili 5–14 mm. longo dense patulo-piloso; lamina late deltoideo-ovata usque oblongo-ovata 2–2.5 cm. longa 1–1.7 cm. lata subacuminata usque obtusa, basi breviter cordata, utrinque pilis cinereis vel sordidis dense molliter velutino-pilosa; cymae axillares dense pauci- vel multiflorae corollis exclusis vix ultra 12 mm. latae, pedunculis plerumque 2.5–3.5 cm. longis folia aequantibus vel longioribus, floribus congestis breviter pedicellatis, bracteis parvis subulatis; sepala 3–3.5 mm. longa extus densissime velutino-pilosa rotundato-ovata apice obtusa; corolla caeruleo-purpurea extus glabra ca. 8 mm. longa.—Guatemala: Dept. Izabal: Open, rocky places along road in pine forest, between Milla 49.5 and ridge 6 miles from Izabal, Montaña del Mico, alt. 65–600 meters, April 1, 1940, *Julian A. Steyermark* 38533 (type in Herb. Field Mus.).

Corolla lavender-purple; stems creeping, or ascending at the tips; calyx pale green; leaves soft, membranaceous, dull grass-green above, gray beneath. Apparently an unusually well marked member of this genus. Related species are *J. nodiflora* (Desr.) Don, which has sessile or short-pedunculate inflorescences and glabrous or almost glabrous sepals; and *J. simulata* House, which has a larger, white corolla.

POLEMONIACEAE

Cobaea Skutchii I. M. Johnston, Journ. Arn. Arb. 19: 128. 1938.—Described from Palmar, Dept. Quezaltenango, at 1,220 meters, *Skutch* 1456, this species is well marked by its small corollas and especially by the very broad calyx lobes. Two later collections of it have been made in Guatemala: Dept. Escuintla: Wet forest, Finca Monterrey, south slope of Volcán de Fuego, alt. 1,200 meters, *Standley* 64538; an herbaceous vine; corolla pale green.—Dept. Quezaltenango: Along Quebrada San Gerónimo, Finca Pireneos, lower, south slopes of Volcán de Santa María, alt. 1,300–2,000 meters, *Steyermark* 33388.

Cobaea tomentulosa Standl. Contr. U. S. Nat. Herb. 17: 457. 1914.—The type was collected near Zunil, Guatemala, at about 2,400 meters, *E. W. Nelson* 3683. The plant seems to be rare, for only one recent collection of it has been made: Guatemala: Dept. Quezaltenango, Volcán de Zunil, alt. 2,500–3,800 meters, *Steyermark* 34674; local name Flor de campana; corolla light yellow-green, the lobes vertically sulcate or wrinkled; calyx grass-green; fruit pale green, mottled with dull purple; leaves membranaceous, rich green above, slightly paler beneath. The species is noteworthy among the several Guatemalan ones for its very large corollas.

VERBENACEAE

Clerodendron pithecobium Standl. & Steyerm., sp. nov.—Frutex epiphyticus scandens, ramis crassiusculis nodosis obtuse subangulatis sordido-ochraceis, internodiis 2.5–4 cm. longis, interdum sublucidis, novellis dense strigosis cito glabratis; folia opposita petiolata subcoriacea, petiolo crasso vulgo 10–12 mm. longo primo sparse strigoso, cito glabrato; lamina oblongo-elliptica vel elliptico-obovata saepius 6–12.5 cm. longa et 4–7.5 cm. lata, apice obtusa usque rotundata et interdum brevissime apicata, basi acuta vel obtusa, supra in sicco fuscescens glabra, costa nervisque impressis, subtus fere concolor lucida primo sparse strigosa sed cito glabrata, minute puncticulata, costa tenera elevata, nervis lateralibus utroque latere ca. 5 tenerrimis prominentibus arcuatis vel fere rectis aliquanto irregularibus angulo ca. semirecto adscendentibus remote a margine junctis, venis obscuris; flores axillares solitarii, pedicellis gracilibus glabris 12–20 mm. longis; calyx campanulatus glaber in sicco subcoriaceus 5–6 mm. longus basi obtusus subcostatus, subtruncatus et brevissime 5-dentatus, dentibus remotis erectis vix 1 mm. longis; corolla purpureo-rubra extus glabra, tubo crassiusculo recto fere 3 cm. longo tereti 4 mm. lato sursum non dilatato, lobis paullo inaequalibus ca. 4 mm. longis late ovalibus vel subrotundatis apice rotundatis ciliatis; stamina inclusa.—Guatemala: Damp, dense forest, La Shuya, southwest of San Martín Chile Verde, Dept. Quezaltenango, alt. 1,620 meters, March 8, 1939, *Paul C. Standley* 67887 (type in Herb. Field Mus.).

While the generic position of this plant probably is somewhat uncertain, it is obviously closely related to the recently described (Bot. Ser. Field Mus. 22: 99. 1940) *Clerodendron Moldenkeanum* Standl., whose type was collected in the region of Volcán de Tacaná, Chiapas. In that the calyx lobes are linear-subulate and 5–6 mm. long.

Verbena teucriifolia Mart. & Gal. Bull. Acad. Brux. 11, pt. 2: 322, 1844.—In Miss Perry's monograph of the genus *Verbena* (Ann. Mo. Bot. Gard. 20: 334. 1933) this species is reported outside Mexico only from Quezaltenango, Guatemala. While in Guatemala it is commoner about Quezaltenango than elsewhere, it does extend considerably farther east. The following recent collections, some of them determined by Miss Perry, have been made in this country: Dept. San Marcos: In field, 2 km. below town of Tajumulco, Volcán de Tajumulco, alt. 1,800 meters, *Steyermark* 36859; stems spreading; corollas purple.—Dept. Quezaltenango: Prostrate on sand, along eastern side of Río Samalá, opposite Santa María de Jesús, alt. 1,500 meters, *Steyermark* 35060. Dry, rocky hillside, Cerro La Pedrera, south of Quezaltenango, alt. 2,400 meters, *Standley* 65521; plants prostrate, common; corolla rose-purple. Near Quezaltenango, open bank, prostrate, alt. 2,300 meters, *Standley* 66437.—Dept. Chimaltenango: Finca La Alameda, near Chimaltenango, alt. 1,800 meters, *J. R. Johnston* 794, 720.

LABIATAE

Satureja Seleriana Loes. Verh. Bot. Ver. Brandenb. 51: 35. 1909.—The type was collected by Seler in *Cupressus* forest of Sierra Santa Elena, above Tecpám, Dept. Chimaltenango, Guatemala. There is cited in addition, with the original description, *Heyde & Lux* 3125 from Chiul, Dept. Quiché, and Loesener published (op. cit. 36) a var. *guatemalensis*, based on a Seler collection from Todos Santos, Dept. Huehuetenango. The plant seems to be decidedly local in Guatemala, and a good part of the specimens cited below were obtained at the type locality—if not from the same plants! It is a handsome shrub because of its rather large and brilliantly colored flowers, which, however, are produced in no great abundance. Guatemala: Dept. Chimaltenango: Sierra Santa Elena, alt. 2,300 meters, December, 1929, *Jorge G. Salas* 1398. Chichoy, *J. R. Johnston* 764, 1638. Cerro de Tecpám, region of Santa Elena, alt. 2,400–2,700 meters, in *Cupressus* forest, *Standley* 61119, 60959, 58796; a slender shrub of 1–2 meters, common, the corolla bright red.—Dept. Quiché: Mount María Tecúm, alt. 3,000 meters, April, 1937, *W. C. Muenscher* 12358. Some of the specimens cited may have reached other herbaria under a manuscript name, as a supposed new species, assigned to the plant by the senior author.

SOLANACEAE

Athenaea locuples Standl. & Steyerm., sp. nov.—Arbuscula 6-metralis ut videtur laxe ramosa, ramis vetustioribus ochraceis, novellis viridibus crassis dense brevissime sordido-villosulis, in sicco obtuse angulatis, internodiis plerumque brevibus; folia solitaria magna longipetiolata membranacea, petiolo gracili 3.5–7.5 cm. longo dense breviterque viscido-villosulo; lamina late ovata vel subrhombeo-ovata vulgo 10–18 cm. longa et 6.5–13 cm. lata acuminata vel longiacuminata, basi late rotundata usque obtusa, ima basi interdum subito contracta et breviter decurrens, subintegra vel saepius remote grosseque repando-dentata vel fere sublobata, dentibus late triangularibus patulis, supra in sicco fusco-viridis sat dense pilis brevibus non viscidis villosula, subtus concolor, dense ubique pilis brevibus viscido-villosula; flores numerosissimi in axillis fasciculati, pedicellis gracilibus 2–2.5 cm. longis dense viscido-puberulis; calyx campanularis viridis baccam arcte amplectens in statu fructifero 6–8 mm. altus et aequilatus vel paullo latior breviter dentatus, dentibus subremotis triangularibus acutis vel subacuminatis in fructo subincurvis, extus dense viscido-puberulus; bacca subglobosa ca. 8 mm. lata glabra apice late rotundata; semina numerosa 1 mm. vel paullo ultra diam. sublucida brunnea subprofunde foveolata.—Guatemala: Dept. San Marcos: Dry, rocky, pine flat, above Finca El Porvenir, along Río Cabús to within two miles of Cueva de las Palomas, south-facing slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, March 16, 1940, *Julian A. Steyermark* 37953 (type in Herb. Field Mus.); leaves soft and membranaceous, rich green above, dull green beneath; fruit globular, dark green turning dull red.

The species is noteworthy for the very abundant flowers, which form umbel-like fascicles. The flowers are much smaller than those of *A. macrocardia*, described below, and the leaves are usually rounded, never cordate, at the base.

Athenaea macrocardia Standl. & Steyerm., sp. nov.—Herba erecta 3-metralis, ramis crassis fusco-ochraceis teretibus ubique dense pilis laxis patentibus longiusculis plurilocularibus ut videtur non viscidis villosis, internodiis elongatis; folia magna solitaria longipetiolata membranacea subaequalia, petiolo gracili 4–10 cm. longo dense villoso; lamina late ovata undulata vel utroque latere breviter pauci-angulata 15–24 cm. longa 9–17 cm. lata subabrupte acuminata vel longiacuminata, basi insigniter obliqua profunde cordata, sinu 1–3 cm. alto, supra in sicco fuscescens ubique viscido-puberula vel villosula, ad nervos densius longiusque villosula, subtus paullo pallidior ubique dense pilis longis brevibusque intermixtis viscido-villosula, pilis longioribus laxe patulis plurilocularibus pallidis; flores in axillis fasciculati pauci vel numerosi, pedicellis gracilibus 2.5–5 cm. longis dense pilis laxis patulis villosis; calyx florifer ca. 13 mm. longus, in statu fructifero auctus et baccam arcte involvens, profunde, saepe fere ad basin, lobatus, dense viscido-villosus, segmentis e basi late ovata attenuato-acuminatis; corolla fere rotata extus dense villosa fere 1.5 cm. longa, profunde lobata, segmentis ovali-ovatis subobtusis intus glabris; filamenta antheris subaequilonga puberula, antheris oblongis crassis 4.5 mm. longis rimis lateralibus dehiscentibus apice subemarginatis glabris; stylus gracilis dense puberulus; bacca subglobosa ca. 1.5 cm. diam. glabra, apice late rotundata; semina subglobosa luteo-brunnea 1.5 mm. diam., dense foveolata sublucida. —Guatemala: Dept. Zacapa: Pine-covered canyon bordering Río Lima, Sierra de las Minas, below Finca Alejandria, alt. 2,000 meters, October 14, 1939, *Julian A. Steyermark* 30004 (type in Herb. Field Mus.); corolla with spreading lobes, pale yellow-cream with olive-green spots around the base; anthers brownish black; fruit orange.

Marked by the large, deeply cordate leaves, suggestive of those of some species of *Cyphomandra*, and by the very large flowers and fruits and deeply lobed calyx.

Brunfelsia nyctaginoides Standl. Bot. Ser. Field Mus. 22: 47. 1940.—Described only recently from Volcán de Tacaná, Chiapas, Mexico, this plant was collected several times during early 1940 in the mountains of extreme western Guatemala, where it is abundant locally, and exceedingly showy. It is, in fact, one of the most beautiful and conspicuous plants of the region, because of its great abundance of large, brilliantly colored flowers. When the species was described, its author was doubtful regarding its generic position, and some of this doubt still persists, in spite of the ample specimens now available for study. As a matter of fact, the plant appears to be something of a connecting link between the genera *Browallia, Brunfelsia,* and *Streptosolen,* but probably best placed, after all, in *Brunfelsia.* The flower color and somewhat woody habit seem to exclude it from *Browallia,* whose species are normally annuals. *Brunfelsia nyctaginoides* closely resembles *Streptosolen* in general appearance and habit, but in that genus the corolla tube is definitely curved, and near the base it is slightly twisted. The corolla tube of the Guatemalan plant can scarcely be said to be curved, but in most of the pressed and dried flowers it is perfectly straight, and at the base it is not at all twisted. The following new collections may be

placed on record: Guatemala: Dept. San Marcos: In mixed forest bordering barranco, between town of Tajumulco and Tecutla, northwestern slopes of Volcán de Tajumulco, alt. 1,800–2,500 meters, February 27, 1940, *Steyermark* 36747; a large, climbing herb; corolla tube orange with greenish at the base, the lobes vermilion flame-scarlet, the orifice orange; leaves membranaceous, dull green above, pale beneath. In sun or shade, along Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, alt. 2,200–2,500 meters, February 18, 1940, *Steyermark* 36016; a sprangling half-shrub, half-climbing; leaves olive-grass-green; corolla scarlet, the orifice golden yellow. Common at higher elevations in *Abies* forest, between San Sebastián and Todos Santos, upper slopes of Volcán de Tajumulco, alt. 3,000–3,800 meters, March 1, 1940, *Steyermark* 36950; herbaceous. It may be noted that the color of the corolla is almost identical with that reported for *Streptosolen Jamesonii*, an Ecuador plant sometimes grown for ornament in California and elsewhere.

Cyphomandra Rojasiana Standl. & Steyerm., sp. nov.—Frutex 3-metralis, ramis teretibus dense minute puberulis vel subhirtellis, pilis brevibus rectangule patulis, nodis in sicco constrictis; folia inaequalia longipetiolata firme membranacea integra, petiolo usque 8.5 cm. longo minute denseque hirtello; lamina asymmetrice lateque ovata 12–22 cm. longa et 9–14 cm. lata vel ultra, abrupte breviter acuminata vel subobtusa, basi inaequali profunde angusteque cordata, sinu lato vel angusto aperto, lobis posticis late rotundatis, supra in sicco intense viridis vel subfusca minutissime sparse puberula, ad costam nervosque minute dense hirtella, subtus concolor, saltem ad nervos breviter hirtella, costa crassa, nervis lateralibus utroque latere ca. 6, venis laxe reticulatis inconspicuis; inflorescentiae axillares umbelliformes ca. 4-florae, pedunculo gracili fere 2 cm. longo viscido-puberulo, pedicellis gracilibus 8–15 mm. longis vel in statu fructifero usque 3 cm. vel ultra dense glanduloso-puberulis; calyx ca. 3 mm. longus et 5 mm. latus basi acutus extus sparse glanduloso-puberulus, lobis late triangularibus vel rotundo-ovatis obtusis vel apice fere rotundatis ad margines dense tomentellis; corolla in alabastro late ovoidea ca. 7 mm. longa extus fere glabra sed ad margines segmentorum dense hirtella, ad anthesin ca. 14 mm. longa fere ad basin lobata, lobis lanceolato-oblongis apicem subobtusum versus angustatis, intus glabris, patentibus; antherae fere sessiles oblongae 5 mm. longae crassae glabrae, apice poris 2 magnis dehiscentes; bacca immatura ellipsoidea 3.5 cm. longa fere 2 cm. lata apice acutata, basin versus paullo angustata, sessilis, primo dense minuteque hirtella, glabrescens.—Guatemala: Dept. Suchitepéquez: In ravine, Finca Moca, alt. 990 meters, October 20, 1934, *Alexander F. Skutch* 1472 (type in Herb. Field Mus.); a straggling shrub to 3 meters high; stems and foliage with a sickening scent; petals green on the outer surface, bronze on the inner; fruit yellow, aromatic.—Dept. Quezaltenango: In thickets on forested slopes, lower, south-facing slopes of Volcán de Santa María, between Finca Pireneos and Los Positos, between Santa María de Jesús and Calahuaché, alt. 1,300–1,500 meters, January 8, 1940, *Steyermark* 33743; a shrub of 3 meters; leaves firmly membranaceous, dark green above, light grass-green beneath; outside of corolla lobes green, the inside purple, shining and bordered with green; anthers light buff-orange; fruit light yellow with rich green stripes and splotches at the apex, pointed at each end, 5 cm. long, 3 cm. broad.

The type was distributed as *Cyphomandra betacea* Sendtn., a South American species, the so-called tree tomato, which sometimes is cultivated in Central American gardens. *C. Rojasiana* is named for Professor Ulises Rojas. It is related to *C. costaricensis* Donn. Smith, a species common along the Atlantic coast of Central America from Honduras to Panama. In the latter the anthers are much shorter than those of *C. Rojasiana*, and they are densely viscid-puberulent or papillose rather than glabrous. The corolla of *C. costaricensis*, also, is much narrower in bud, and much longer in anthesis.

Lycianthes vulpina Standl. Field Mus. Bot. 4: 321. 1929. —Described from the Lancetilla Valley near Tela, Atlantic coast of Honduras, this vine has been found several times on the Atlantic slope of Honduras, and also in British Honduras. Naturally to be expected from the intervening coast of northern Guatemala, it may now be reported definitely from the last country: Dept. Izabal: Wet forest, Escoba, across the bay from Puerto Barrios, at sea level, *Standley* 72917; a coarse, subscandent, branched shrub, the corolla purplish white.

Solanum celsum Standl. & Morton, Bot. Ser. Field Mus. 18: 1077. 1938.—Based upon *Skutch* 2364 from El General, Costa Rica, at 950 meters. A recent collection from Panama represents the same species: Cana–Cuasi trail, Camp 2, Chepigana District, Prov. Darién, alt. 600 meters, March, 1940, *M. E. & R. A. Terry* 1498. A shrub of 2.5–4.5 meters. The specimen bears globose fruits 8 mm. in diameter.

SCROPHULARIACEAE

Berendtia rugosa (Benth.) Gray, Proc. Amer. Acad. 7: 380. 1868. *Diplacus rugosus* Benth. in DC. Prodr. 10: 368. 1846. *B. Ghiesbrechtii* Gray, loc. cit.—The genus *Berendtia* consists of four species, all of which were described from Mexico, and have been reported only from that country. The present species, however, extends into western Guatemala: Dept. Huehuetenango: Rocky mountain side, Chiantla, alt. 2,100–2,400 meters, *Skutch* 1134. Near Chiantla, brushy, rocky slope, *Standley* 65667; a shrub of 1.5 meters; corolla red. Sierra de los Cuchumatanes, above Chiantla, dry or moist, shaded cliffs, alt. 1,950–2,550 meters, *Standley* 65633, 65660; a shrub of 1–1.5 meters, very viscid, frequent in this region.

Ghiesbreghtia grandiflora Gray, Proc. Amer. Acad. 8: 630. 1873.—The genus is monotypic, based upon material collected in the dry region of Chiapas, Mexico. In Guatemala it was collected many years ago by Heyde and Lux at San Miguel Uspantán, Quiché. Apparently the tree is a rare one, and it is worth while to place on record a new collection, which extends considerably the known range: Guatemala: Dept. Chiquimula, along Río Tacó, between Chiquimula and Montaña Barriol, 3–15 miles northwest of Chiquimula, alt. 500–1,200 meters, October, 1939, *Steyermark* 30666; a tree of 6 meters. The specimens are in fruit.

Russelia laciniata Standl. & Steyerm., sp. nov.—Frutex 60–90 cm. altus ramosus, ramis gracillimis omnibus teretibus pallide viridibus glabris nodosis, internodiis elongatis; folia modica opposita sessilia vel vix 2 mm. longe petiolata ovata vel saepius late rhombico-ovata 5–8 cm. longa plerumque 2–5 cm. lata acuminata vel longiacuminata, infra medium vulgo basin versus plus minusve cuneato-angustata, basi ipsa late cuneata usque subrotundata, crasse membranacea, margine fere ubique saltem supra partem tertiam infimam profunde inciso-dentato vel laciniato-dentato, dentibus vel laciniis plerumque anguste triangulari-lanceolatis usque 8 mm. longis attenuatis vel acuminatis, subrecurvis, petiolo minute piloso vel puberulo; lamina in sicco supra griseo-viridis ad nervos venasque scaberulo-puberula, venis prominulis arcte reticulatis, subtus fere concolor, fere glabra sed ad costam nervosque pilis paucis inconspicuis incurvis obsita, costa tenerrima, nervis lateralibus teneris prominentibus arcuatis, venis prominentibus et arcte reticulatis; inflorescentia bene evoluta non visa, floribus ut videtur paucis breviter pedicellatis; sepala inaequalia 4–7 mm. longa glabra vel glabrata lanceolata vel ovata cuspidato-acuminata; capsula late ovoidea glabra brunnescens ca. 6 mm. longa, apice abrupte in rostrum rigidum ca. 3 mm. longum contracta.—Guatemala: Dept. San Marcos, above Finca El Porvenir, along Río Cabús to within two miles of Cueva de las Palomas, south-facing slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, March 16, 1940, *Julian A. Steyermark* 37982 (type in Herb. Field Mus.); leaves membranaceous, light grass-green on both sides.

The material, unfortunately, is incomplete, only two flowers, in fruiting state, being present on the specimen. The foliage is so unlike that of any other *Russelia* we have seen, especially in its deeply laciniate leaf margins with somewhat outcurved laciniations, that we have no hesitancy in describing the plant as a new species.

Veronica arvensis L. Sp. Pl. 13. 1753.—A common weed in many parts of the United States and Canada, this European plant apparently is not recorded from Central America. One recent collection has been made in Guatemala: Dept. Chimaltenango: Procumbent in open meadow, scarce, Cerro de Tecpám, region of Santa Elena, alt. 2,700 meters, December, 1938, *Standley* 58684.

BIGNONIACEAE

Jacaranda Copaia (Aubl.) D. Don, Edinb. Phil. Journ. 9: 267. 1823. *Bignonia Copaia* Aubl. Pl. Guian. 650. *pl. 265*. 1775.—Seibert in his recent excellent account of the *Bignoniaceae of the Maya Area* (Carnegie Inst. Wash. Publ. 522: 387. 1940) does not report this handsome tree from Guatemala. It has been known to occur in British Honduras and from Nicaragua southward to northern South America. One sterile collection attests the presence of the species in Guatemala: Dept. Izabal: Between Virginia and Lago de Izabal, Montaña del Mico, alt. 50–500 meters, *Steyermark* 38872; a shrub; leaves membranaceous, grass-green above, pale green beneath.

ACANTHACEAE

Aphelandra Heydeana Donn. Smith, Bot. Gaz. 18: 209. 1893. —*Heyde & Lux* 4037 from Chupadero, Dept. Santa Rosa, Guatemala, at 1,500 meters, is the type of this species, which is confined to Guatemala, and apparently not common there, at least in regions where recent collections have been made. The following new collections are available: Dept. Guatemala, *Ignacio Aguilar* 303. Dept. Santa Rosa, damp forest near Oratorio, alt. 1,200 meters, *Standley* 60671; a shrub of 1.5 meters, the corolla scarlet.

Aphelandra speciosa Brandeg. Univ. Calif. Publ. Bot. 6: 196. 1915. —The species was described from Chiapas, Mexico, and has been known only from that country. It is, however, common in forests of western Guatemala, where it is an exceptionally handsome and showy plant. Guatemala: Dept. Suchitepéquez: In woodland, Finca Moca, alt. 990 meters, *W. C. Muenscher* 12452.—Dept. Quezaltenango: Near Calahuaché, alt. 1,020 meters, damp forest, *Standley* 67128. Finca Pireneos, below Santa María de Jesús, alt. 1,350 meters, damp, dense forest, *Standley* 68220, 68327, 68336, 68334; a simple shrub 1–1.5 meters high.—Dept. San Marcos: Finca Vergel, near Rodeo, alt. 900 meters, wet forest, Standley 68934, 68969, 68954; a simple shrub a meter high; bracts bright red. Volcán de Tajumulco, above Finca El Porvenir, alt. 1,300–1,500 meters, *Steyermark* 37220; local name Flor de Mayo; leaves firmly membranaceous, dark green above, pale green beneath; bracts coral-red.

Aphelandra Terryae Standl., sp. nov. —Frutex 60–120 cm. altus ramosus, ramis teretibus sordido-ochraceis dense pilis sordidis vel fulvescentibus brevibus adscendentibus vel patulis pilosis, internodiis brevibus; folia breviter petiolata membranacea, petiolo crasso 3–7 mm. longo dense piloso; lamina oblanceolato-oblonga 6–12 cm. longa 2–4 cm. lata acuminata, basin angustam versus longe sensimque attenuato-angustata, supra in sicco fusco-viridis, ad costam pilis longiusculis hirsuta, aliter glabra vel glabrata, subtus vix pallidior ad costam nervosque sparse vel densiuscule pilosa, aliter fere glabra, costa tenera prominente, nervis lateralibus angulo lato adscendentibus arcuatis; spicae terminales simplices corollis exclusis 5–8.5 cm. longae et paullo ultra 1 cm. latae densissime multiflorae; bracteae arcte imbricatae late ovali-ovatae vel rotundo-obovatae 1 cm. longae vel paullo breviores, infimae interdum viridescentes et mucronulatae, ceterae apice late rotundatae et muticae, intus dense sericeae, extus sparse vel dense praesertim prope costam sericeae vel interdum glabratae, fere omnes utroque latere paullo supra medium glandulis paucis parvis orbicularibus arcte aggregatis onustae, bracteolis lanceolato-oblongis striatis ca. 7 mm. longis acuminatis minute pilosulis; calycis segmenta lineari-lanceolata subulato-attenuata bracteolis aequilonga; corolla ut dicitur coccinea 4.5–5.5 cm. longa in alabastro longe attenuato-acuminata extus dense pilis minutis laxis pilosula, tubo 2.5–3.5 cm. longo sursum sensim dilatato, fauce 7 mm. lato, labio superiore ca. 2 cm. longo acuminato dorso paullo concavo, inferiore subaequilongo trilobo, lobis anguste acuminatis; antherae 5–6 mm. longae; capsula immatura oblonga glabra lucida, apice in stylum abrupte contracta.—Panama: Tucuti, Chepigana District, Prov. Darién, near sea level, March 5, 1940, *M. E. & R. A. Terry* 1377 (type in Herb. Field Mus.).

In Leonard's key to species of *Aphelandra* in *Flora of Costa Rica* (Bot. Ser. Field Mus. 18: 1193. 1938) this would run at once to *A. Sinclairiana* Nees, a species to which it bears little resemblance. In general appearance *A. Terryae* is similar to *A. Deppeana* Nees, but that has dentate bracts.

RUBIACEAE

Bouvardia erecta (DC.) Standl. N. Amer. Fl. 32: 110. 1921. *Catesbaea erecta* DC. Prodr. 4: 401. 1830. *Hedyotis spinescens* Sessé & Moc. Fl. Mex. 22. 1893.—In *North American Flora* this small Mexican shrub is reported only from the State of Puebla, but two collections not then accessible indicate that its range is somewhat wider: Maltrata, Veracruz, May, 1937, *Matuda* 1338. Cordillera of Oaxaca, in 1840, *Galeotti* 2637. There is in the Herbarium of Field Museum an excellent specimen of *Sessé & Mociño* 560, received from Madrid, that agrees perfectly with Puebla collections. This specimen bears the collectors' name *Hedyotis spinescens*, and is evidently part of the type.

Bouvardia nubigena Standl. & Steyerm., sp. nov.—Frutex metralis ramosus omnino glaber, ramis sordide ochraceis subteretibus rimosis; vagina stipularis brevis longicuspidata et interdum pauciaristata; folia opposita petiolata in sicco crassiuscula et subrigida, petiolo 4–8 mm. longo; lamina ovata usque late ovata vel interdum subrhombeo-ovata, 3–5 cm. longa 1.5–3 cm. lata, acuminata vel longiacuminata, basi obtusa usque rotundata, saepe abrupte contracta et decurrens, supra vix lucida, costa nervisque impressis, subtus paullo pallidior, costa prominente, nervis lateralibus utroque latere saepius 4 arcuatis angulo angusto adscendentibus, venis obsoletis; flores ad apicem rami umbellati et 3–4 vel in cymas parvas paucifloras dispositi, pedicellis usque 1 cm. longis sed vulgo brevioribus; hypanthium obovoideum 3 mm. longum basi obtusum vel acutiusculum; sepala anguste linearia viridia in anthesi 6–7 mm. longa, in statu fructifero usque 10 mm. longa, ad margines remote scaberula; corolla coccinea glabra, tubo gracili 2 cm. longo 2 mm. lato, superne paullo dilatato et ad 3 mm. lato, lobis ovato-oblongis suberectis 4 mm. longis obtusis; capsula subdidymo-globosa ca. 8 mm. lata et 6 mm. alta, basi late rotundata.—Guatemala: Dept. Jutiapa, lower edge of cloud forest on Volcán de Suchitán, northwest of Asun-

ción Mita, alt. 2,050 meters, November 18, 1939, *Julian A. Steyermark* 31901 (type in Herb. Field Mus.).

Shrubby, 4 feet tall; flowers scarlet; leaves dull green above, pale beneath. The nearest relative of this species is *Bouvardia laevis* Mart. & Gal., of southern Mexico. The Guatemalan plant has much broader, thicker leaves, and a relatively compact inflorescence.

Bouvardia Steyermarkii Standl., sp. nov.—Suffrutex 30 cm. altus vel ultra omnino glaber sparse ramosus, ramis gracilibus sed rigidis subteretibus pallidis, internodiis foliis brevioribus vel rare longioribus; stipulae triangulari-subulatae 1.5–2 mm. longae; folia brevissime petiolata subcoriacea patentia vel adscendentia, petiolo crassiusculo vix ultra 3 mm. longo; lamina lanceolato-linearis 3–4.5 cm. longa 3–5 mm. lata apicem fere subulatum versus longe angusteque attenuata, basi acuta vel acuminata, supra sublucida, costa impressa, nervis occultis, subtus pallidior, costa tenera prominula, nervis obsoletis, margine revoluto; flores albi fragrantes in cymas terminales foliatas densas paucifloras dispositi, pedicellis rigidis plerumque 7–10 mm. longis; hypanthium obovoideum 2 mm. longum basi obtusum; sepala foliacea lanceolata vel lineari-lanceolata ad anthesin ca. 7 mm. longa sed in statu fructifero usque 15 mm. longa, longiattenuata viridia basi angustata; corolla extus glabra, tubo gracillimo ca. 33 mm. longo et 1.2 mm. lato sursum vix dilatato et fauce 2 mm. tantum lato, lobis patentibus ovato-oblongis ca. 8 mm. longis et 4 mm. latis acutiusculis intus glabris; capsula subdidymoglobosa ca. 6 mm. longa et aequilata basi rotundata.—Guatemala: Dept. Zacapa, forested slopes, Sierra de las Minas, near summit of mountain, between Río Hondo and Finca Alejandria, alt. 1,700–2,000 meters, October 11, 1939, *Julian A. Steyermark* 29671 (type in Herb. Field Mus.). Dept. Jalapa, top of ridge near Minas de Croma, northeast of Jalapa, alt. 1,500–1,700 meters, December 12, 1939, *Julian A. Steyermark* 33110 (sterile, but probably to be referred here).

In the key to species of *Bouvardia* in *North American Flora* (32: 100. 1921), the plant runs at once to *B. erecta* (DC.) Standl., of Mexico. That differs conspicuously in general appearance from *B. Steyermarkii* because of its numerous short, stout, divaricate branches that tend to become spinose, and on account of its much smaller leaves. The sepals of the Mexican species are much smaller.

Chiococca oaxacana Standl., sp. nov.—Rami graciles teretes ochracei vel pallide brunnescentes, novellis viridibus dense puberulis, internodiis brevibus vel elongatis; stipulae virides persistentes alte connatae ca. 3 mm. longae, vagina lata et fere truncata abrupte in cuspidem aequilongum contracta; folia inter minora petiolata subcoriacea, petiolo gracili 6–13 mm. longo puberulo; lamina lanceolato-oblonga 5–6.5 cm. longa 1.5–2 cm. lata apicem obtusiusculum versus paullo angustata, basin attenuatam versus sensim angustata, supra viridis lucida glabra, costa nervisque haud elevatis, subtus pallidior densiuscule patulo-hirtella, costa gracili prominente, nervis lateralibus utroque latere 4–5 vix prominulis obliquis, venis obsoletis; flores racemosi, racemis simplicibus vel ramosis axillaribus singulis foliis fere aequilongis longipedunculatis, pedunculo usque 3 cm. longo, ramis pedicellisque dense breviter pilosulis, pedicellis usque 3 mm. longis, racemis paucifloris, bracteis minutis late ovatis; hypanthium ovale fere 2 mm. longum dense hirtellum, calyce 1 mm. longo breviter dentato, dentibus late ovato-deltoideis obtusis erectis glabratis; fructus immaturus 4 mm. longus suborbicularis paullo compressus sparse hirtellus.—Mexico: Cerro San Antonio, State of Oaxaca, alt. 1,650 meters, June 26, 1906, *C. Conzatti* 1418 (type in Herb. Field Mus.).

Principally because it was assumed that all Mexican Chiococcas with pubescent foliage belonged to a single species, this collection has been referred by the writer to *C. pubescens* Standl. That species, however, differs in having relatively much broader, ovate or broadly ovate leaves, very obtuse to broadly rounded at the base, and more or less hirtellous on the upper surface. Its inflorescences, too, are smaller, mostly simple, and few-flowered.

In *North American Flora* (32: 286. 1934) the range of *C. pubescens* is given as "Tamaulipas, Puebla, and Oaxaca." The last state probably should be excluded from the range, since the reference pertains presumably to *C. oaxacana.* At the present time only the following collections of *C. pubescens* are at hand: Mexico: San Luis Tultitlanapa, Puebla, *Purpus* 3334, type collection. Victoria, Tamaulipas, alt. 320 meters, *Palmer* 136. El Milagro, Sierra de San Carlos, Tamaulipas, *Bartlett* 11178.

Deppea inaequalis Standl. & Steyerm., sp. nov.—Frutex 1–1.5 m. altus ramosus, ramis gracilibus teretibus, vetustioribus ochraceis, novellis viridescentibus, omnibus in sicco roseo tinctis, novellis minutissime puberulis, internodiis brevibus vel interdum elongatis; stipulae minutae deciduae late triangulares vix ultra 0.5 mm. longae; folia opposita modica petiolata tenuiter membranacea inaequalia, petiolo gracili usque 12 mm. longo sed saepe fere nullo minutissime puberulo; lamina ovato-lanceolata usque anguste lanceolata vel elliptico-lanceolata vulgo 5–12 cm. longa et 2–4 cm. lata longiacuminata, acumine sensim angustato interdum subfalcato, basin versus saepius subabrupte contracta et longe angusteque interdum fere ad basin petioli attenuata, supra viridis sparse pilis brevibus laxis conspersa, costa nervisque non elevatis, subtus paullo pallidior sparse minute puberula vel glabra, costa tenera vix elevata, nervis lateralibus utroque latere ca. 7 arcuatis angulo lato adscendentibus marginem fere attingentibus; flores parvi cymosi, cymis laxe paucifloris ut videtur interdum recurvis reductis et fere umbelliformibus, pedunculis gracillimis usque 5 cm. longis sed saepius 1–2 cm. longis, pedicellis gracillimis minute sparseque puberulis usque 8 mm. longis, bracteis minutis; hypanthium late obovoideum ca. 1 mm. longum basi acutiusculum sparse et fere microscopice puberulum vel fere glabrum; sepala viridia maxime inaequalia, unum vulgo multo minus et 1.5–2 mm. tantum longum, alia 3 ca. 4–7 mm. longa linearia usque lanceolata fere glabra; corolla in alabastro acuta extus sparse minute puberula, expansa ca. 4 mm. longa, tubo brevissimo, lobis oblongo-ovatis intus glabris; antherae oblongae acutiusculae ca. 2.3 mm. longae subexsertae; capsula immatura ovalis ca. 3 mm. longa costata sparse minute puberula vel fere glabra.—Guatemala: Dept. San Marcos: Above Finca El Porvenir, along Río Cabús to within two miles of Cueva de las Palomas, south-facing slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, March 16, 1940, *Julian A. Steyermark* 37974 (type in Herb. Field Mus.). Also No. 37947 from the same locality.

Leaves membranaceous, olive-green above, pale green beneath; corolla white; calyx pale green; growing on the dry, lower slopes. The acute (in bud) corolla indicates that the plant is related to *Deppea cornifolia* Benth., but in that the calyx lobes are minute, triangular, and shorter than the hypanthium.

Gonzalagunia exaltata Standl., sp. nov.—Arbor 18-metralis, trunco 30 cm. diam., ramis teretibus brunnescentibus glabratis, novellis sparse adpresso-pilosis, internodiis abbreviatis; stipulae persistentes e basi ovata longe setaceo-attenuatae usque 1.5 cm. longae strigosae, glabrescentes; folia modica vel majuscula breviter petiolata membranacea, petiolo 6–20 mm. longo, interdum fere ad basin marginato, pilis longis adpresso-piloso; lamina oblanceolato-oblonga 11–21 cm. longa 3.5–6 cm. lata abrupte longe angusteque caudato-acuminata, acumine interdum subfalcato, basin versus longe sensimque attenuata et ad petiolum decurrens, supra in sicco viridis primo laxe adpresso-pilosa sed cito glabrescens et glaberrima, costa nervisque non elevatis, subtus paullo pallidior sparse pilis longis laxis pallidis adpressis pilosa, in statu adulto glabrata, costa tenera prominente, nervis lateralibus utroque latere ca. 15 subarcuatis tenerrimis obliquis marginem fere attingentibus, venis obscuris subimpressis; paniculae terminales sessiles vel breviter pedunculatae thyrsiformes et angustissimae 14–16 cm. longae et 2.5 cm. latae dense multiflorae, rhachi crassa dense longipilosa, floribus sessilibus in cymulas parvas sessiles vel brevissime pedunculatas plurifloras vel multifloras aggregatis, bracteis linearibus vel lineari-lanceolatis viridescentibus parvis inconspicuis; hypanthium globosum viridescens vix ad 1 mm. longum sparse pilosulum vel glabratum; calyx 4-lobus vix ultra 1 mm. longus pallide viridis, lobis ovatis acuminatis fere glabris; corolla alba extus fere glabra et tantum basi loborum sparse pilis albis gracillimis pilosula, tubo gracili ca. 6 mm. longo sursum vix dilatato, lobis 4 subrotundatis intus glabris; antherae inclusae; ovarium 4-loculare.—Costa Rica: Beside river, basin of El General, Prov. San José, alt. 675–900 meters, March, 1940, *Alexander F. Skutch* 4747 (type in Herb. Field Mus.).

So far as I know, no other species of the genus has been reported as attaining such a height as the present tree. The species is characterized by the combination of almost glabrous, very long-attenuate leaves and small, nearly glabrous corollas.

Paederia ciliata (Bartl.) Standl., comb. nov.—*Lygodysodea ciliata* Bartl. in DC. Prodr. 4: 470. 1830. *Rondeletia volubilis* Sessé & Moc. loc. cit. in syn. *L. mexicana* DC. loc. cit. in syn. *Rondeletia volubilis* Sessé & Moc. Pl. Nov. Hisp. 36. 1887. *Paederia Pringlei* Greenm. Proc. Amer. Acad. 39: 92. 1903.—In *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 1392. 1926), *Paederia Pringlei* was reported only from the Mexican states of Guerrero and Morelos. Recent collections show that it has a somewhat wider range: Mexico: State of Mexico: Chorrera, Distr. Temascaltepec, alt. 1,230 meters, *G. B. Hinton* 1195, 8078, 7234. Salitre, Distr. Temascaltepec, alt. 910 meters, a vine on cliffs, *Hinton* 4738.—Without locality, *Sessé & Mociño* 1393. The Sessé and Mociño collection is the type of *Rondeletia volubilis.*

Psychotria mima Standl., sp. nov.—Frutex 4-metralis, ramis gracilibus viridibus subteretibus glabris; stipulae virides persistentes erectae et adpressae 5–6 mm. longae profunde bifidae, segmentis semiovatis obtusis; folia magna breviter petiolata firme membranacea, petiolo gracili 1.8–3.5 cm. longo glabro; lamina late elliptica usque oblongo-elliptica 15–25 cm. longa 8–14.5 cm. lata abrupte vel subabrupte acutata, apice ipso subacuto, basi obtusa vel cuneata, prope vel paullo supra medium latissima, glabra, supra in sicco intense viridis, costa basin versus impressa, nervis venisque non elevatis, subtus paullo pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 11 solemniter arcuatis tenerrimis angulo recto vel fere recto abeuntibus prominentibus prope marginem junctis, venis prominulis tenerrimis laxe reticulatis; inflorescentia terminalis paniculata magna 12 cm. longe pedunculata ca. 23 cm. longa et basi 15 cm. lata subpyramidalis laxissime multiflora, ramis abrupte deflexis gracilibus minute hirtellis omnibus basi bracteatis, bracteis infimis 7-8 mm. longis lineari-lanceolatis viridibus persistentibus, floribus sessilibus in cymulas parvas paucifloras dispositis, bracteis cymularum minutis; hypanthium vix ad 1 mm. longum minute puberulum, calyce vix 0.3 mm. alto minute denticulato; corolla extus minute puberula vel hirtella in alabastro obtusa infundibuliformis 6-7 mm. longa, tubo basi crassiusculo infra medium abrupte in faucem urceolatum dilatato, ore aliquanto angustato, lobis vix ultra 1 mm. longis late deltoideis subobtusis erectis; antherae inclusae.—Costa Rica: In forest, vicinity of Pejivalle, Prov. Cartago, alt. 600-850 meters, January, 1940, *Alexander F. Skutch* 4589 (type in Herb. Field Mus.); flowers pale yellow; fruit blue (no fruits are present with the type specimen).

In general appearance *Psychotria mima* is strikingly like *P. solitudinum* Standl., collected by Dr. Skutch at El General, Costa Rica. In that species, however, the branches of the panicle are not deflexed, and the corolla in bud is conspicuously 5-tuberculate at the apex; in *P. mima* there is no indication of any such tubercles.

Psychotria Steyermarkii Standl., sp. nov.—Frutex 0.5-1.5 m. altus ramosus, ramis gracilibus teretibus ochraceis, novellis dense pilis patulis pallidis pilosis, internodiis brevibus; stipulae fere liberae 8-9 mm. longae erectae subpersistentes fere ad basin bilobae, lobis linearibus vel fere subulatis attenuatis, basi puberulae; folia modica vel subparva petiolata membranacea, petiolo vulgo 1-2 cm. longo sed interdum multo breviore minute patulo-piloso; lamina anguste oblongo-lanceolata usque fere lineari-oblonga 5-14 cm. longa 1.5-2.5 cm. lata longe angusteque attenuato-acuminata, basin acutam vel acuminatam versus longe attenuata, supra in sicco viridis tantum ad costam densiuscule pilosa, costa nervisque prominulis, subtus pallidior ad costam nervosque breviter sordido-pilosula vel puberula, costa tenera prominente, nervis lateralibus utroque latere ca. 23, nervo altero tenuiore inter quamque parem saliente, tenerrimis prominulis angulo fere recto divergentibus juxta marginem junctis, venis paucis prominulis laxe reticulatis; inflorescentia terminalis sed interdum pseudolateralis ut videtur interdum recurva usque 3.5 cm. longe pedunculata cymosa e basi trichotoma, ca. 3 cm. longa et aequilata, ramis omnibus basi bracteatis glabris vel glabratis, basalibus suberectis rectis, floribus subcapitatim in capitula pauca saepe tantum 3 aggregatis sessilibus vel breviter pedicellatis, bracteis infimis foliaceis lineari-lanceolatis ca. 1 cm. longis acuminato-attenuatis, superioribus ca. 7–8 mm. longis elliptico-oblongis acutis concavis et subadpressis glabris vel glabratis; calyx ad apicem fructus persistens 1.5–2 mm. longus ad medium vel profundius dentatus, dentibus erectis ovatis acutis glabris; fructus subglobosus 4 mm. longus glaber, pyrenis dorso grosse obtuseque costatis.—Guatemala: Dept. Quezaltenango: On ridge, lower, south-facing slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, along great barranco between Finca Pireneos and San Juan Patzulín, alt. 1,300–1,500 meters, January 6, 1940, *Julian A. Steyermark* 33700 (type in Herb. Field Mus.); a small, suffrutescent shrub of 60–90 cm.; leaves thin, dark, dull green above, pale gray-green beneath. Moist banks, along Quebrada San Gerónimo, Finca Pireneos, alt. 1,300–2,000 meters, January 1–2, 1940, *Steyermark* 33461; a shrub of 1.5 meters; fruit oblong-ovoid, ultramarine blue-purple.

The species is a somewhat isolated one, not closely related to any other of Guatemala, or to any Mexican one.

Rondeletia mexicana (Turcz.) Standl., comb. nov. *Siphonandra mexicana* Turcz. Bull. Soc. Nat. Mosc. 21, pt. 1: 581. 1848. *Rondeletia oaxacana* Standl. Field Mus. Bot. 11: 255. 1936.—Both the names cited are based upon the same collection, *Galeotti* 2664 bis, from Oaxaca, Mexico, at 900 meters. Bentham and Hooker, like all other authors, apparently, reduced *Siphonandra* to the synonymy of *Chiococca*, a quite different genus. Who first made the reduction, I do not know, but it is repeated, of course, by the writer in *North American Flora* (32: 289. 1934). The original description of *Siphonandra* is certainly misleading in many respects, so much so that one wonders whether it really could have been based upon the Galeotti collection, which is represented in the Herbarium of Field Museum by a photograph of a specimen in the Delessert Herbarium, and by a fragment of the type of *Rondeletia oaxacana*, from the Paris Herbarium. The description of the corolla and calyx of *Siphonandra* as sericeous would exclude the plant definitely from the genus *Chiococca*, and the description of other parts of the plant agrees no better with a *Chiococca* than a *Rondeletia*. Since there is no reason for supposing that Galeotti distributed more than one species under the number cited, it may safely be assumed that Turczinanow was describing the same plant that I named *Rondeletia oaxacana*, but described it most inaccurately.

Rudgea simiarum Standl. & Steyerm., sp. nov.—Arbor 6-metralis omnino glabra, ramulis crassiusculis subteretibus ochraceis, novellis pallide viridibus, internodiis brevibus; stipulae persistentes in vaginam truncatam obscure mucronatam 2.5–3 mm. altam connatae, vagina intus dense hirsuta, pilis breviter exsertis; folia modica breviter petiolata subcoriacea, petiolo gracili vel crassiusculo 8–15 mm. longo; lamina lanceolato-oblonga usque elliptico-oblonga vulgo prope medium latissima 7–16 cm. longa 2.5–7 cm. lata subabrupte longiacuminata, acumine anguste attenuato, basi acuta vel saepius subabrupte aliquanto contracta et longe decurrens, supra in sicco fusco-brunnescens lucida, costa nervisque prominentibus, venis vix prominulis laxe reticulatis, subtus pallidior, costa tenera prominente, nervis lateralibus utroque latere ca. 8 arcuatis tenerrimis prominulis angulo semirecto vel paullo latiore adscendentibus juxta marginem junctis, venis prominulis laxe reticulatis; inflorescentia terminalis cymoso-corymbiformis dense pauciflora 2–3.5 cm. longe pedunculata, corollis exclusis 2–2.5 cm. lata, basi 3- vel pluriradiata, ramis brevibus crassis rectis vel curvis basi nudis sed alte supra basin minute bracteatis, floribus sessilibus vel breviter pedicellatis, pedicellis crassissimis apice articulatis; hypanthium late columnare vix 1 mm. altum et aequilatum vel latius, calyce fere marginiformi 0.5 mm. alto truncato remote minutissime denticulato; corolla alba in alabastro apice obtusa et exappendiculata, tubo 10–11 mm. longo sursum sensim paullo dilatato fauce 3–3.5 mm. lato, lobis ca. 8 mm. longis lineari-lanceolatis apicem subobtusum versus sensim attenuatis intus glabris patentibus vel recurvis; antherae fere toto exsertae lineares 3 mm. longae.—Guatemala: Dept. Izabal: Between Virginia and Lago de Izabal, Montaña del Mico, alt. 50–500 meters, April 5, 1940, *Julian A. Steyermark* 38839 (type in Herb. Field Mus.).

Fresh leaves subcoriaceous, dull, dark green above, dull green beneath; peduncles light green; flowers white. Although the generic position of the plant as here treated is not altogether satisfactory, the species seems more properly referable to *Rudgea* than to any other related group. The stipules do not have the indurate or fleshy appendages that characterize the genus *Rudgea*, but it may be assumed that the dense hairs on the inner surface of the stipule sheath are modifications of them. Otherwise the plant must be treated as a

species of *Psychotria*, with none of whose Central American representatives does it seem closely related.

LOBELIACEAE

Lobelia aguana Wimmer, Repert. Sp. Nov. 38: 86. 1935. The type, in the Herbarium of Field Museum, was collected on Volcán de Agua, Guatemala, at 3,150 meters, *Kellerman* 7502. The plant is much like *Lobelia laxiflora* HBK., but with more abundant and much larger, more brilliantly colored flowers. It is, in fact, one of the handsomest and showiest of all Central American Lobeliaceae, which is saying a great deal. The following recent collections show that the species ranges rather widely: Mexico: Volcán de Tacaná, western slopes, alt. 2,800 meters, *Matuda* 2893.—Guatemala: Dept. San Marcos: Volcán de Tajumulco, alt. 3,000 meters, in 1934, *K. P. Schmidt.*—Dept. Quezaltenango: Pine-*Abies* forest, Volcán de Zunil, alt. 2,500–3,800 meters, *Steyermark* 34738; corolla bright red with yellow at the base; leaves firmly membranaceous, dull green above, pale green beneath; calyx grass-green, with purplish on one side. Moist, dense forest, mountains southeast of Palestina, alt. 2,700 meters, *Standley* 66323; a simple herb 1–1.5 meters high; corolla yellowish red.—Dept. Sacatepéquez: In damp, mixed or pine forest, slopes of Volcán de Agua above Santa María de Jesús, alt. 2,250–3,000 meters, *Standley* 65234, 65091; a simple herb 1–2 meters high, common at higher elevations; corolla bright red and yellow.—Dept. San Marcos: Along road between San Sebastián at km. 21 and km. 8, 8–18 miles northwest of San Marcos, alt. 2,700–3,800 meters, *Steyermark* 35639; an herb 1.5 meters tall; leaves dull green; corolla crimson-red in the upper half, pale orange in the lower lip.

COMPOSITAE

Aphanactis Standleyi Steyermark, sp. nov.—Herba annua caespitosa acaulis, 2–4 mm. alta; internodiis nullis; foliis oppositis sessilibus decussatis congestis rosulato-caespitosis 3–5-nerviis crassiusculis, 9–16 mm. longis, 7–16 mm. latis, infimis supremisque minimis, late ovatis vel elliptico-subrotundatis, supra ubique parce villosis et viridibus, integris, subtus fere glabris et subalbidis, horizontale patentibus, planis; capitulis in anthesi et in fructu sessilibus 4–5 terminalibus congestis, 3.5–4 mm. altis, 2.5–3 mm. latis, in medio foliorum insertis, pedunculis nullis; phyllariis principalibus (alio extus fulcratis) 6, biseriatis, subaequalibus erectis membranaceis, plus minusve 5-nerviis, ovatis vel late oblanceolatis, acutis, 3–4

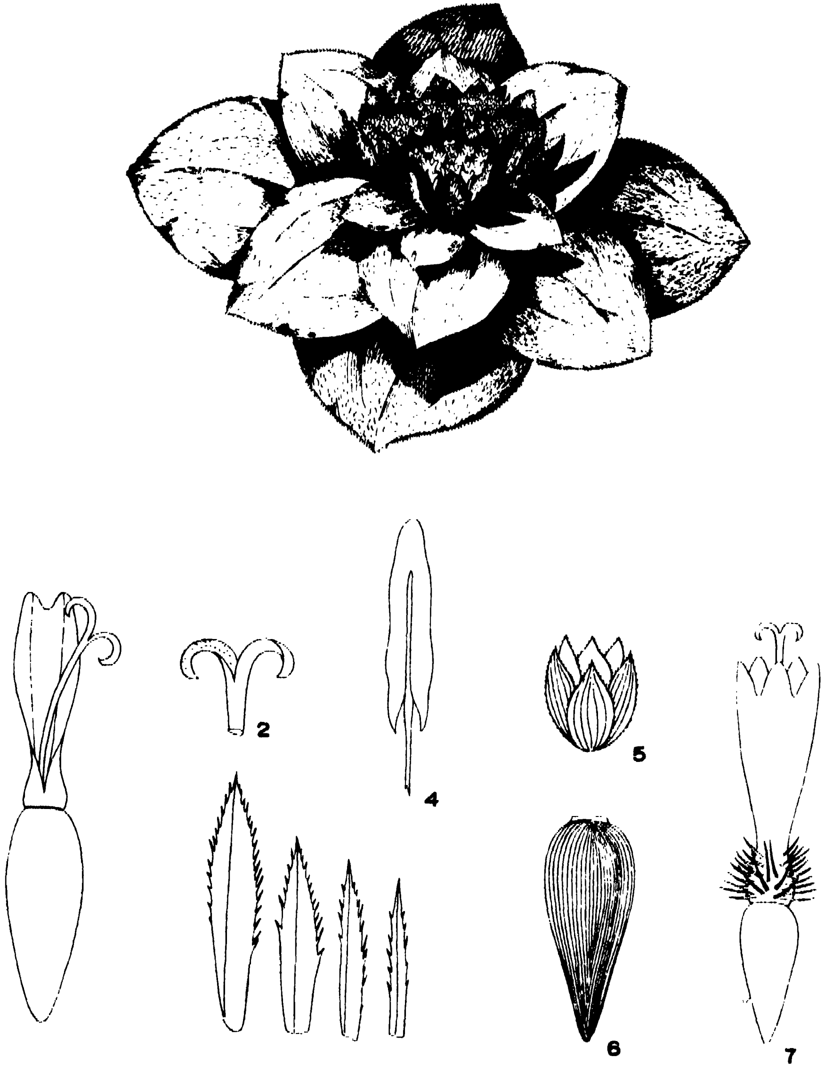

FIG. 3. *Aphanactis Standleyi* Steyermark. Habit drawing (× 2). 1, Ray floret (× 22); 2, Style branches (× 25); 3, Pales in a series from left to right showing the ones towards the center of the heads at left gradually enlarging to those near the outer portion of the heads at right (× 8); 4, A single stamen detached (× 22); 5, A single head with only involucral bracts shown (× 4); 6, Mature achene from disk floret (× 23); 7, Disk floret (× 22).

mm. longis, 1–1.5 mm. latis, glabris vel extimis ad margines minute ciliatis, marginibus scariosis; phyllario alio extus dorso dense villoso late ovato acuto vel obtusiusculo; receptaculo conico; paleis receptaculi diversis paullo asymmetricis tenuibus 1.8–2.5 mm. longis, 0.2–0.8 mm. latis, intimis brevissimis aristiformibus vel elliptico-lanceolatis, extimis lanceolatis vel oblanceolatis acuminatis vel aristatis, intimis parce serratis vel dense ciliatis, extimis ciliatis vel uno latere magis ciliatis, 1-nerviis; corollis femineis radii ca. 5 luteolo-viridibus glabris, quam involucro brevioribus vel vix aequilongis, 1.5 mm. longis (tubo 0.5 mm. longo basi paullo ampliato, lamina erecta cuneata 2-dentata 1 mm. longa, 0.5 mm. lata); corollis hermaphroditis disci ca. 8–10 luteolo-viridibus, 1.5 mm. longis (tubo basi ampliato villoso, 0.5 mm. longo, pilis rectis simplicibus, fauce 0.7 mm. longo glabro, lobis 5 ovatis 0.3 mm. longis); antheris basi acuminatis; achaeniis radii et disci similibus 1–1.3 mm. longis, obesis biconvexis subobcompressis obscure plus minusve 4–5-angulatis glabris fuscis epapposis obovoideis vel turbinato-oblanceolatis, apice truncatis, glabris, minute multistriatulis.—Guatemala: Dept. Chimaltenango: In open meadow, leaves flat on the ground, flowers yellowish green, Cerro de Tecpám, region of Santa Elena, alt. 2,700 meters, December 4, 1938, *Paul C. Standley* 58674 (type in Herb. Field Mus.).

One of the most unusual plants ever found in Central American collections is this new species of *Aphanactis.* Until this collection was at hand from Guatemala, the genus was known only from the subalpine Andean regions of Ecuador and Peru, the original species, *A. Jamesoniana,* being described by Weddell from the Andes of Ecuador, while the second species, *A. villosa,* was described by Blake (Journ. Wash. Acad. Sci. 16: 216. 1926) from subalpine slopes at Chasqui, Peru.

Aphanactis Standleyi is a remarkably distinct species in the genus. It differs from the other known species in its annual root, leaves crowded so closely as to appear rosulate, internodes, therefore not present, the many sessile heads set compactly upon the leafy mass, 2-toothed rays, and much broader leaves. The plant appears to grow flat upon the ground, so minute is it, and since the heads remain sessile even in fruit, the whole plant is no more than 4 mm. tall at the most. In *A. villosa* and *A. Jamesoniana* the tube of the ray flowers is villous, while in *A. Standleyi* it is glabrous; in addition, the disk flowers in *A. Standleyi* are villous only at the ampliate base, while in the other two species both the tube and limb of the corolla are villous. Its annual habit, 2-toothed rays, glabrous tube of the

ray flowers, corolla of the disk flowers pubescent only at the base of the tube, and terminal, multicephalous inflorescence, make *A. Standleyi* stand apart so far from the other species of the genus as to suggest subgeneric rank for it. However, further collections of additional species may reveal that there are no clear subgeneric lines. The combination of epappose achenes, narrow pales, fertile, very minute ray flowers, dwarf, cespitose habit, opposite, 3-nerved leaves, tapering-based achenes, and subbiseriate involucre of *A. Standleyi* place it congenerically with *Aphanactis*.

Archibaccharis androgyna (Brandeg.) Blake, Contr. U. S. Nat. Herb. 23: 1509. 1926. *Baccharis androgyna* Brandeg. Univ. Calif. Publ. Bot. 6: 77. 1914.—The type is *Purpus* 6666 from Cerro del Boquerón, Chiapas, Mexico. A typical collection of the species is at hand from Guatemala: Dept. San Marcos: Small, open barranco bordering meadow, along Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, alt. 2,200–2,500 meters, *Steyermark* 35976; a shrub 1–1.5 meters tall.

Archibaccharis Standleyi Blake, var. **aequivenia** Blake, Brittonia 2: 340. 1937.—The species was described from the region of Siguatepeque, Dept. Comayagua, Honduras, the variety from Finca Moca, Dept. Suchitepéquez, Guatemala, at 900 meters, *Skutch* 2056. Another collection of the variety has been made in Guatemala: Dept. Quezaltenango: High barranco along Río Samalá, between Santa María de Jesús and Calahuaché, alt. 1,200–1,300 meters, *Steyermark* 33893; stems ascending; flowers white; leaves thin, dull green above, pale, dull green beneath.

Neurolaena macrophylla Greenm. Proc. Amer. Acad. 39: 118. 1903.—The type of this well marked species was collected at Chicharras, Chiapas, Mexico, and in *North American Flora* (34: 307. 1927) Rydberg reports it only from that Mexican state. The plant, however, extends into western Guatemala: Dept. Suchitepéquez: Finca Moca, alt. 900 meters, in woods, *Skutch* 2055; a shrub or small tree, to 7.5 meters in height; heads yellow.—Dept. Quezaltenango: Damp thicket, Finca Pireneos, below Santa María de Jesús, alt. 1,350 meters, *Standley* 68437; a coarse herb 2 meters high; heads greenish yellow. Finca Pireneos, *Steyermark* 33224; a shrub 2.5 meters tall; flowers yellow; bracts pale green; leaves dark green.—Dept. San Marcos: At middle elevations in forest, above Finca El Porvenir, Volcán de Tajumulco, alt. 1,300–1,500 meters, *Steyermark* 37239; local name Arnica; a shrub of 2.5–3 meters; leaves thin, grass-green on both sides.

Senecio boquetensis Standl., sp. nov.—Herba ut videtur erecta 30–90 cm. alta inferne ut videtur simplex, superne scapis 1–3 terminata, caule crassiusculo tereti tomento laxo albo dense obtecto, inferne dense foliato, internodiis brevibus; folia numerosa majuscula alterna ambitu lanceolata vel oblongo-lanceolata plerumque 16–21 cm. longa et 4–5 cm. lata longiacuminata, basin versus longiattenuata et ad basin petioli decurrentia, ima basi petioli late dilatata et caulem omnino amplectantia, lamina interdum in toto margine irregulariter sinuato-dentata, dentibus latis mucronatis, interdum basin versus pinnatim lyrato-lobata, lobis inaequalibus basin versus sensim decrescentibus late triangularibus plus minusve mucronato-dentatis; lamina supra intense viridis, in statu adulto glabra, in juventute laxe floccoso-tomentosa, basibus pilorum interdum persistentibus et tuberculiformibus, subtus incana ubique tomento subadpresso sed laxo dense obtecta; folia suprema valde reducta et bracteiformia, linearia vel lanceolata 2–4 cm. tantum longa dentata vel pinnatifida; pedunculi valde elongati fere glabri, capitulis paucis vel numerosis dense cymoso-aggregatis; capitula breviter vel longiuscule pedicellata ca. 12 mm. alta et 10 mm. lata aurantiaca, pedicellis fere glabris, basi bracteis numerosis linearibus inaequalibus suberectis fere glabris involucrum aequantibus vel duplo brevioribus fulcrata; phyllaria ca. 12 et 7–8 mm. longa subadpressa et aequalia glabra acuta, obscure trinervia; radii late lineares 5–6 mm. longi patentes; corolla glabra tenuis 8 mm. longa, lobis oblongis 1.5 mm. longis; achaenia juvenilia glabra, pappi setis albis 5 mm. longis.—Panama: Between Cerro Vaca and Hato del Loro, eastern Chiriquí, alt. 850–1,100 meters, December, 1911, *H. Pittier* 5382 (type in Herb. Field Mus.). Open areas, Bajo Mono, Boquete District, Prov. Chiriquí, alt. 1,350 meters, February 2, 1940, *M. E. Terry* 1299.

The species appears to be an isolated one, altogether different in appearance from any other known from Central America.

Vernonia acilepis Benth. ex Oerst. Vid. Medd. 1852: 68. 1852.—The type was collected by Oersted on Volcán de Masaya, Nicaragua, at 2,000 meters. Gleason in *North American Flora* (33: 60. 1922) gives the country erroneously as Costa Rica. The species may now be reported from Guatemala: Dept. Guatemala, near Fiscal, alt. 1,100 meters, dry, rocky thicket, December, 1938, *Standley* 59631. Only one plant was found, but probably the species is plentiful enough during the rainy season. The vegetation about Fiscal is so parched by middle December that few green plants can be discovered, except in particularly well protected spots.

Vernonia Corae Standl. & Steyerm., sp. nov.—Frutex 1.5–4 m. altus; ramulis juvenilibus et superioribus griseo-fuscis dense tomentosis; foliis magnis ad apicem ramulorum numerosis; petiolis griseo-fuscis dense tomentosis 1.5–3 cm. longis; laminis oblongo-oblanceolatis vel anguste obovatis, 12–25 cm. longis, 3.5–9 cm. prope vel supra medium latis, apice sensim acuminatis, basin versus sensim attenuatis, incurvo-serrulatis, dentibus utroque latere 5–25 tenuibus sursum incurvis, 1.5–2 mm. longis, supra olivaceo-viridibus vel pallido-gramineo-viridibus sparse adpresso-pilosulis, nervis mediis et lateralibus dense tomentellis, subtus pallido-viridibus, pilis densius praesertim ad nervos medios et laterales indutis etiam glandulis sessilibus globulosis resinosis conspersis, tenuiter membranaceis, nervis lateralibus utroque latere 7–9; capitulis 1–4 maximis subcampanulatis subsolitariis, umbellatis, pedunculis 4–8.5 cm. longis dense griseo-fusco-tomentosis; floribus numerosis, ca. 125–150; capitulis ad anthesin 2–2.3 cm. longis, 3.5–4 cm. latis; involucro 6–7-seriato graduato, 2 cm. alto: phyllariis imbricatis, apicibus adscendentibus, olivaceo-viridibus, marginibus scariosis et erosis vel fimbrillatis, apicibus mucronatis, superne dense adpresso-scaberulis, exterioribus ovato-rotundis, late ovatis vel oblongis, minute mucronatis, 8–10 mm. longis, 7–9 mm. latis, interioribus similibus, intimis angustioribus minoribusque, oblongis vel late oblanceolatis, prominente mucronatis; floribus lilacinis, 15–17 mm. longis (tubis angustissimis 8–10 mm. longis, faucibus ampliatis infundibuliformibus 4–5 mm. longis extus glandulosis, glandulis sessilibus resinosis, lobis linearibus plus minusve 4.5 mm. longis, 0.5 mm. latis, extus glandulis sessilibus resinosis conspersis et partibus supremis dense hispidulis); achaeniis nigris glabris tetragonis truncatis, apicibus calloso-incrassatis; pappi aristis setaceis pallidis 2.5–3 mm. longis, sursum serrulatis.—Guatemala: Dept. San Marcos: Moist, shaded slopes, between town of Tajumulco and Tecutla (9 miles south and west of Tajumulco), northwestern slopes of Volcán de Tajumulco, alt. 1,800–2,500 meters, February 27, 1940, *Julian A. Steyermark* 36787 (type in Herb. Field Mus.). Between Todos Santos and Finca El Porvenir, middle slopes of Volcán de Tajumulco, alt. 1,300–3,000 meters, March 1, 1940, *Steyermark* 36979. Along road above Barranco Eminencia, alt. 2,700 meters, March 14, 1939, *Standley 68574*.

This new species of *Vernonia*, named for Cora Shoop Steyermark, wife of the junior author, because of her special interest in the genus, is related to *V. Salviniae* Hemsl., with which it has been confused, but it is amply distinct from that species. *Vernonia Corae* has lilac flowers only 15–17 mm. long, while *V. Salviniae* has deep purple or

darker flowers 24–28 mm. long. The pappus of *V. Corae* is only 2.5–3 mm. long, that of *V. Salviniae* 5–10 mm. long. The leaves in *V. Corae* are pale or olive-green on the upper surface and thinly membranaceous, while those of *V. Salviniae* are dull, dark green and of a firmer texture. The teeth on the leaf margins of *V. Salviniae* are short and straight, pointing upward and outward, but those of *V. Corae* are longer, more slender, and conspicuously incurved. One of the most distinctive characters is in the involucral bracts, those of *V. Corae* being dull or olive-green, conspicuously scarious-margined, the tips erect or ascending, and the outer surface densely appressed-scaberulous; those of *V. Salviniae* are dark, rosy purple, firmer in texture, conspicuously squarrose, and the outer surface is provided with shorter, non-scaberulous pubescence. The pubescence of the upper and lower leaf surfaces is quite different in the two species, that of *V. Salviniae* being more dense and of longer hairs, with more numerous sessile glands on the lower leaf surface.

Vernonia Salviniae was described and illustrated with an excellent plate by Hemsley in *Biologia Centrali-Americana* 2: 73. *pl. 41.* 1881. The colored plate shows the rosy purple, squarrose bracts of the involucre and the deep purple flowers characteristic of the species. The type, which was collected in Guatemala at "Las Nubes, Cerro de Zunil, 4,350 feet, *Salvin*," is preserved in the Kew Herbarium, and has not been seen by the authors, but the many collections which have been made since from the type locality verify the authenticity of the color of the flowers and bracts. This species is common throughout the Occidente of Guatemala and is much commoner than *V. Corae*, having a wide range. *Vernonia Corae* is confined to the moist banks of barrancos and smaller streams of Volcán de Tajumulco and Volcán de Tacaná, while *Vernonia Salviniae* is a very common shrub of the lower cloud forests all the way from Volcán de Zunil and Volcán de Santa María to the Cerro del Boquerón in the State of Chiapas, Mexico.

The following collections of *Vernonia Salviniae* have been seen by the authors: Mexico: Chiapas: Cerro del Boquerón, August, 1913, *Purpus* 6669.—Guatemala: Dept. Quezaltenango: Finca Pireneos, below Santa María de Jesús, alt. 1,350–1,380 meters, March, 1939, *Standley* 68325 (local name Araña), 68303. Volcan de Zunil, alt. 1,900 meters, August, 1934, *Skutch* 953.—Dept. San Marcos: Barranco Eminencia, above San Rafael Pie de la Cuesta, alt. 2,100–2,400 meters, March, 1939, *Standley* 68664. Between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters, February, 1940, *Steyermark* 36417.

A NEW GENUS OF COMPOSITAE FROM NORTHWESTERN ALABAMA

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A NEW GENUS OF THE COMPOSITAE FROM NORTHWESTERN ALABAMA

EARL EDWARD SHERFF

Recently, through the kindness of Dr. Roland M. Harper, I have been permitted to study specimens collected by him in Franklin County, northwestern Alabama. Among these plants, all of them Compositae, were two specimens which he had suspected of representing a new genus. My own study confirms Dr. Harper's suspicion. Moreover, Dr. S. F. Blake, Senior Botanist of the United States Bureau of Plant Industry, has made an independent and carefully detailed examination of the two specimens in question and concludes likewise that they represent a new genus. Dr. Blake joins me in naming this new genus and in publishing it herewith as:

Jamesianthus Blake & Sherff, gen. nov.[1]

Capitula heterogama radiata multiflora, floribus omnibus fertilibus vel aliquot disci sterilibus. Involucri campanulati ca. 3-seriati valde gradati phyllaria pauca (ca. 15) oblonga obtusa plurinervia exteriora herbacea interiora submembranacea, ea achaenia radii subtendentia basi paulum concava non complicata. Receptaculum planum nudum foveolatum. Radii ca. 6 feminei fertiles, tubo glandulari-piloso, lamina patente anguste oblongo-ovali obscure 3-denticulata ca. 10-nervia; corollae disci tubulosae, tubo glandulari-piloso, fauce longiore anguste obconica, dentibus 5 ovato-triangularibus acutis. Achaenia radii anguste obovoidea paulum obcompressa obscure ca. 15-striata tuberculato-hispidula, basi carpopodio brevi albido apice collari annulari brevissimo albido pappifero donata achaenia disci similia subteretia vel paulum compressa. Pappus radii et disci e setis deciduis capillaribus 1-seriatis inaequalibus hispidulis paucis (ca. 6-8) e collari apicali persistente achaenii orientibus achaenii corpus saltem subaequantibus sistens. Styli basi conico-fusiformi rami lineares recurvati dorso papillosi vix hispiduli, appendice deltoidea obtusa papillosa basi lateraliter dorsaliterque breviter hispida. Antherae basi vix cordatae, appendice apicali ovata munitae.—Herba perennis erecta infra inflorescentiam simplex prope apicem glandulari-pilosa, oppositifolia foliis lanceolatis sessilibus vel brevissime petiolatis penniveniis remote calloso-denticulatis basi breviter hastatis, capitulis paucis terminalibus pedunculatis radiatis aureis mediocribus.

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[1] Named, at Dr. Harper's suggestion, in honor of Mr. Robert Leslie James, who first called the type species to Dr. Harper's attention in September, 1937, and through whose cooperation Dr. Harper was enabled to make collections and observations of it at several spots, all of them within a few miles of the type locality.

Type species: *Jamesianthus alabamensis* Blake & Sherff (*vide infra*).

Capitula heterogamous, radiate, many-flowered, flowers all fertile or some of the disc-flowers sterile. Phyllaries of the campanulate and about 3-seriate, strongly graduate involucre few (about 15), oblong, obtuse, many-nerved, outer ones herbaceous, inner ones submembranaceous, those subtending the achenes of the ray-florets somewhat concave at the base but not folded together. Receptacle flat, naked, minutely pitted. Ray-florets about 6, pistillate, fertile; the tube glandular-pilose; the ligule spreading, narrowly oblong-oval, obscurely 3-denticulate, about 10-nerved; disc-corollas tubular, the type glandular-pilose, the throat longer and narrowly obconic; the 5 teeth ovate-triangular and acute. Achenes of the ray-florets narrowly obovoid, slightly obcompressed, obscurely about 15-striate, tuberculate-hispidulous, with a short whitish gynobase at bottom, at apex capped with a very short annular collar, this whitish and bearing the pappus; achenes of the disc-florets similar, subterete or slightly compressed. Pappus of both ray- and disc-florets composed of bristles, these deciduous, capillary, 1-seriate, unequal, hispidulous, few (about 6–8), arising from the achene's persistent apical collar and at least subequal to the achene's body. Styles conic-fusiform at base; their branches linear, recurved, dorsally papillose but scarcely hispidulous; appendage deltoid, obtuse, papillose, at base laterally and dorsally short-hispid. Anthers scarcely cordate at base, with an ovate appendage at apex.—An erect, perennial herb, unbranched below inflorescence, glandular-pilose near apex, opposite-leaved; leaves sessile or very shortly petiolate, penninerved, remotely calloso-denticulate, at base shortly hastate; capitula few, terminal, pedunculate, radiate, yellow-flowered, medium-sized.

The radiate heads, naked receptacle, ecaudate anthers, and pappus of capillary bristles exclude this plant from all the tribes of Compositae except Astereae, Helenieae, and Senecioneae. The distinctions between these tribes are not always very apparent, and the placing of a genus sometimes depends more on its relationship to some already classified genus than on the presence of any particularly distinctive characters. The present plant is referred to the Helenieae-Jaumeinae because of its very close resemblance not only in habit but also in technical characters to the genus *Arnicastrum* Greenm.

Arnicastrum, a genus of a single species (*A. glandulosum* Greenm.) with a scarcely distinguishable variety (var. *vestitum* Greenm.), is known only from three collections from the Mexican states of Chihuahua and Durango. *Arnicastrum* and *Jamesianthus* are similar in habit, both being simple or little branched perennial herbs, with opposite, more or less lanceolate leaves and medium-sized yellow heads. In *Arnicastrum* the stem bears erect branches mostly from the lower axils and arises from a rhizome bearing scale-like leaves, and the heads are solitary or ternate at tip of stem and borne on long, naked peduncles; the leaves are strictly sessile, subamplexicaul, much firmer than in *Jamesianthus*, and strongly about 5-nerved from the base. The involucres of the two genera are similar, of about 3 series of oblong phyllaries, the outer thicker and more definitely herbaceous, the inner thinner and submembranous, but in *Arnicastrum* the phyllaries are of about the same length, not strongly graduate as in *Jamesianthus*. The rays and disc-corollas are strikingly similar in the two genera, and in both are pilose on the tube with gland-tipped hairs. The most mature achenes of *Arnicastrum* examined are linear-clavate, many-nerved, and slightly hispidulous. Unfortunately none of the achenes of *Arnicastrum* seem to be completely mature. Greenman described the disc-achenes as slightly compressed and 4-angled; Rydberg says that the achenes are flattened dorsoventrally. The ray-achenes, in the young state at least, are certainly obcompressed; those of the disc appear to be compressed rather than obcompressed. The stamens and style-branches offer no significant differences; the style-branches of *Arnicastrum* are pubescent with somewhat longer hairs on the back, but the terminal appendages are identical in the two genera. In *Arnicastrum* the base of the style is set in a short, cylindric nectary; in *Jamesianthus* there is no evident nectary, and the base of the style is conic-fusiform. The principal distinction between the two genera resides in the pappus. In *Arnicastrum* the ray-achenes are epappose (a feature mentioned by Greenman, but overlooked by Rydberg in the North American Flora), and the pappus of the disc-achenes consists of about 20–35 somewhat unequal, hispidulous, persistent, capillary bristles. In *Jamesianthus* the achenes of both ray-flowers and disc-flowers bear a pappus of few (about 6 to 8) decidedly unequal, capillary bristles arising from a very short whitish collar (not evident in *Arnicastrum*), and so deciduous that it has been difficult to count them exactly. The similarity of these two genera, both apparently rare and coming from regions with no particular phytogeographic connections, is quite striking.

Jamesianthus alabamensis Blake & Sherff, sp. nov.

Herba simplex vel subsimplex gracilis plerumque 6–9 dm. alta e paucis (±6) elongatis subfibrosis radicibus orta; caule subarcuato viridi subtetragono striato glabro vel sub nodis minute pubescenti, internodiis saepius 4–6 (raro –8) cm. longis et plerumque sub 3 mm. crassis. Folia opposita sessilia vel mediana brevissime (ca. 2 mm.) petiolata; lamina (saltem sicca) tenuissima subrhomboide lanceolata vel oblanceolata apice sensim vel subabrupte acuminata sub medio cuneato-angustata basi ipsa (hac 4–8 mm. lata) auriculata lobulis antrorsum flexis ±2 mm. longis saepe acriter apiculatis, graciliter penninervi, supra viridi glabraque infra pallidiori glabraque vel nervis obscure hispidula margine minutissime spinuloso-ciliata et remotissime subdenticulata, 5–9 cm. longa et 1–2.5 cm. lata. Inflorescentia usque ad ±3 dm. alta corymbosa aperta pauci- (±13-) capitulata, ramis elongatis gracillimisque (internodiis saepe 6–9 cm. longis et ±0.5 mm. crassis). Capitula gracillime pedunculata pedunculis subsparsim patenterque glandulari-pubescentibus saepius 4–8 cm. longis pansa ad anthesin 3–4 cm. lata et 10–12 mm. alta. Involucri phyllaria extima oblonga vel lineari-oblonga et ±2.5 mm. longa intima anguste ovato-oblonga et usque ad 9 mm. longa omnia extus irregulariter sparsimque pubescentia pilis glandulari-capitatis. Radii flavi, lamina 1–1.5 cm. longa, tubo ca. 4–5 mm. longo. Achaenia griseo-brunnea vel saepius atro-purpurascentia atro-rubrave, corpore 3.2–4 mm. longa.

Specimens examined: *Roland M. Harper* 3816, on shaded, gravelly, semicalcareous banks, about 4 miles north of Russellville, Franklin County, Alabama, October 7, 1940 (type, Herb. Field Mus.: cotype, Herb. U. S. Nat. Mus.).

A simple or but slightly branched herb, slender, commonly 6–9 dm. tall, arising from a few (±6) elongate, subfibrous roots; stem slightly curved, green, subquadrangular, striate, glabrous or under the nodes minutely pubescent, internodes more often 4–6 (rarely –8) cm. long and commonly under 3 mm. thick. Leaves opposite, sessile or the median ones very shortly (about 2 mm.) petiolate; blade (at least in dry state) very thin, subrhomboidally lanceolate or oblanceolate, at apex gradually or subabruptly acuminate, below the middle cuneately narrowed, at the very base (this 4–8 mm. wide) auriculate (the tiny lobes antrorsely flexed, ±2 mm. long, often sharply apiculate), delicately penninerved, above green and glabrous, below paler and glabrous or along the nerves obscurely hispidulous, at margin very minutely spinulose-ciliate and most remotely subden-

ticulate, 5–9 cm. long and 1–2.5 cm. wide. Inflorescence up to ±3 dm. tall, corymbose, open; branches elongate and very slender (internodes often 6–9 cm. long and ±0.5 mm. thick). Capitula ±13, very slenderly peduncled, at anthesis 3–4 cm. wide and 10–12 mm. tall; peduncles subsparsely and divaricately glandular-pubescent, more often 4–8 cm. long. Involucral phyllaries irregularly and sparsely pubescent on outer surface with glandular-capitate hairs; outer phyllaries oblong or linear-oblong and ±2.5 mm. long; inner ones narrowly ovate-oblong and up to 9 mm. long. Rays yellow, ligule 1–1.5 cm. long, tube about 4–5 mm. long. Achenes grayish-brown or more often becoming dark-purple or dark-red, the body 3.2–4 mm. long.

ADDITIONS TO OUR KNOWLEDGE OF THE AMERICAN AND HAWAIIAN FLORAS

BY

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ADDITIONS TO OUR KNOWLEDGE OF THE AMERICAN AND HAWAIIAN FLORAS[1]

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Pittosporum amplectens sp. nov.—Rami saltem novelli valde adpresso-hispidi setis fulvis. Folia subnumerosa, suberecta, plus minusve terminaliter disposita, sicca brunneo-viridia, novella hispida, oblonga vel (interdum latissime) oblongo-oblanceolata, apice acuminata, magnitudine variabilia; petiolo gracili, glabro vel irregulariter sparsissimeque tomentoso, 1–4 cm. longo; lamina nunc glabra nunc praecipue infra sparsim adpresso-setosa setis gracilibus fulvisque, supra raro subnitida, infra perspicue elevato-venosa, nunc tantum 1 dm. longa et ±2 cm. lata nunc plerumque ±1.9 dm. longa et ±6.5 (etiam +8) cm. lata. Flores non visi. Pedunculi fertiles axillares caulinive, saepe subverticillate 2–3-congregati, saltem demum subglabrescentes, plerumque 5–10 mm. longi; pedicellis usque ad circ. 10, 3–5 mm. longis. Capsulae fere semimaturae saepe 6–9-congregatae, laeves glabraeque, circumambitu ovali-oblongae, 1.5–1.7 cm. longae (stylo gracili ±3 mm. longo excluso) et 1.2–1.4 cm. latae; unica matura valva visa, hac circumambitu subcordato-rotundata, extus laevi glabraque, circ. 2.3 cm. longa et ±2.6 cm. lata. Semina atra, laevia, sub 6 mm. longa et 5 mm. lata.

At least young portions of branches strongly appressed-hispid with brown setae. Leaves subnumerous, suberect, more or less terminally disposed, brownish-green when dry, hispid when young, oblong or (at times very broadly) oblong-oblanceolate, at apex acuminate, variable in size; petiole slender, glabrous or irregularly and very sparsely tomentose, 1–4 cm. long; blade now glabrous now especially beneath sparsely appressed-setose with slender, brown setae, above rarely subglossy, beneath conspicuously salient-veiny, now only 1 dm. long and ±2 cm. wide now commonly ±1.9 dm. long and ±6.5 (or even +8) cm. wide. Flowers not seen. Peduncles of pistillate flowers axillary or cauline, often subverticillately 2–3-clustered, at least finally subglabrescent, commonly 5–10 mm. long; pedicels up to about 10, 3–5 mm. long. Capsules almost semimature often 6–9-clustered, smooth and glabrous, in outline oval-oblong, 1.5–1.7 cm. long (excluding the slender, ±3 mm. long style) and 1.2–1.4 cm. wide; a single mature valve seen, this subcordate-rounded in outline, externally smooth and glabrous, about 2.3 cm. long and ±2.6 cm. wide. Seeds black, smooth, under 6 mm. long and 5 mm. wide.

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[1] The following abbreviations are used for the depositories of specimens cited in this paper: Arn., Arnold Arboretum, Jamaica Plain; Berl., Berlin Botanical Garden; Bish., Bernice Pauahi Bishop Museum, Honolulu; Corn., Cornell University Herbarium, Ithaca; Deg., herbarium of Otto Degener, Honolulu; Del., Delessert Herbarium, Geneva; Field, Field Museum of Natural History, Chicago; Goth., Arboretum of Gothenburg; Gray, Gray Herbarium of Harvard University, Cambridge; Kew, Royal Botanical Gardens, Kew; Minn., University of Minnesota Herbarium, Minneapolis; Mo., Missouri Botanical Gardens, St. Louis; N. Y., New York Botanical Garden; Par., Museum of Natural History, Paris; U. S., United States National Museum, Washington; Yunck., herbarium of Dr. Truman George Yuncker, Greencastle, Indiana.

To conform with the usage employed throughout my previous writings, the term *cotype* is used to connote a duplicate of the type, as shown usually by the fact that the duplicate bears the same collector's name and number and same habitat-data. The term as here used is thus the equivalent of *paratype* or *isotype* as used by certain other authors.

Specimens examined: *Joseph F. Rock* 8,376, on the slopes and in crater of a small, extinct volcano, west of Honokanenui, mountains of Kohala, Isl. Hawaii, June, 1910 (Arn.; Berl.; Bish.; Del.; Field, 2 sheets; Kew; Par.); *Rock* 8,384, Kohala, Isl. Hawaii, June 20, 1910 (type, Bish.).

Smaller-leaved sprays, at least in the absence of flowers, offer an illusory resemblance to normal material of *Pittosporum glabrum* of Oahu, but can be told by the hairs persistent here and there underneath some of the leaves. Such sprays suggest *P. sulcatum* var. *Remyi* except that they have erugose and glabrous, not rugose and pubescent, capsules. The seeds are rather small for the size of the mature capsule, thus leaving ample space in the capsular chamber. In this respect there is a resemblance to the mostly larger-fruited and otherwise very different *P. Hosmeri* and its var. *longifolium*, both of Hawaii. The very large leaves on most of the material examined call to mind, however, still other species and it is found that *P. amplectens* embraces[1] in one combination an assortment of characters that elsewhere are more or less separately associated with diverse forms.

A tentative Greek-Latin name which Rock applied to both his no. 8,376 and his no. 8,384 in the herbarium indicated that they preferred marsh and forest.[2] Some of the largest leaves are much discolored with black patches, as in leaves, for example, of *Pittosporum Gayanum* of Kauai. In the case of *P. acuminatum*, Rock (in herb.) attributed such discoloration to the fungus, *Capnodium lanosum*.

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[1] Whence the trivial name *amplectens*, embracing.

[2] Rock had labeled all of his material as a new species, but later, in his Indigenous Trees of the Hawaiian Islands (pp. 153–172. 1913), he omitted mention of it. This omission was covered by his general explanation which follows: "the writer wishes to state that he has gathered much material from localities where Pittosporums had never been recorded. Some of them (*sic*) undoubtedly are

Pittosporum acutisepalum (Hillebr.) comb. nov.; *Pittosporum glomeratum* var. *β acutisepalum* Hillebr. Fl. Haw. Isls. 23. 1888.

In 1865 or earlier, Hillebrand collected at Nuuanu on the Island of Oahu a sheet of fine material of a *Pittosporum* which he labeled, "*Pittosporum an sp. nova aff. P. glabro.*" This was sent to Hooker and is now in the Kew Herbarium. In his Flora of the Hawaiian Islands, published considerably later, Hillebrand described identical material, from "Palolo to Niu" on Oahu, for his new variety *acutisepalum*[1] of his new species *P. glomeratum*. Recently I have been supplied by Dr. L. Diels, Director of the Berlin Botanical Garden, with excellent photographs of Hillebrand's types of both *P. glomeratum* and its var. *acutisepalum*. It is evident from a comparison of these photographs with Hillebrand's original descriptions and the more recently collected herbarium materials that the var. *acutisepalum* may well be regarded as a distinct species.

Specimens examined: *Erling Christophersen & Gerrit P. Wilder* 1,429 *pro parte*, in moist place, alt. 500–600 meters, East Palolo ridge, Oahu, January 16, 1931 (Berl.; Bish.; Field, 2 sheets; a form with sepals often only 5 mm. but petals ±17 mm. long, entirely separate and very slender; the flowering specimens of this set originally commixed by the collectors with mature fruiting specimens of *P. sulcatum*); *Otto Degener* 10,975, in rain-forest, Mt. Olympus, Oahu, January 9, 1927 (Berl.; Deg.; Field); *Degener & Kwan Kee Park* 10,983, in forest, Wilhelmina Rise, Oahu, November 11, 1931 (Berl.; Field); *Degener, Takamoto, Tam, & Martinez* 10,798, in lower forest, east ridge of Manoa Valley, Oahu, March 29, 1936

new, but owing to incomplete specimens, as the wanting of flowers, or mature capsules, the writer thinks it advisable not to include them in this already voluminous book, but rather to wait for additional material and then make an exhaustive study of this very variable group of plants." In not taking up Rock's unpublished herbarium name, I have followed the recommendations accompanying the International Rules.

[1] Spelled *acutisepala* by Hillebrand in his posthumously published Flora. I assume that he inadvertently used the feminine ending *a* in his mss. to accord with an understood "*varietas*" rather than to connote a substantive-plural use of the word. (*Cf.* his *Tetramolopium Chamissonis* var. *arbuscula* on p. 199, *T. arenarium* var. *dentata* on p. 200, and *Claoxylon sandwicense* var. *tomentosa* on p. 399 of the same work. In these last two cases he of course could not have intended a substantive use. In the case of the somewhat comparable *Panicum monticola* published by Hillebrand on pp. 494 and 500, it seems entirely possible that he was in fact thinking in terms of a substantive.)

(Corn.; Del.; Mo.; *cum P. glabro commixtum*); *J. Arthur Harris* C242,243, Oahu, September 10, 1924 (Goth.); *Hillebrand*, Nuuanu, Oahu (Kew).

Pittosporum glabrum var. **glomeratum** (Hillebr.) comb. nov.; *Pittosporum glomeratum* Hillebr. Fl. Haw. Isls. 23. 1888.

An extended search through herbarium material reveals no specimens matching Hillebrand's type. Rock, who had not as yet seen the type specimen, wrote in 1913 (Indig. Trees Haw. Isls. 157) that *P. glomeratum* Hillebr. "comes very close to *P. glabrum* and is perhaps only a form of it." At Berlin the type sheet had been "bearbeitet für das 'Pflanzenreich' " by Moeser and the name *glomeratum* reduced to the rank of a mere forma under *P. glabrum.* On a different sheet of Hillebrand's Hawaiian *Pittosporum* material at Berlin, Rock later had written (as translated by me from the photograph sent me by Dr. Diels): "I agree entirely with L. Moeser, *Pittosporum glomeratum* is in any case only a form of *P. glabrum.*" My own judgment is that *P. glomeratum* is specifically affiliated, to be sure, with *P. glabrum*, but is entitled to varietal rank under that species. From *P. glabrum* proper it differs in its pedunculate *cluster of almost sessile* flowers, *pubescent* peduncle, sepals and ovary *tomentose*, etc.

Pittosporum glabrum intermedium var. nov.—Inflorescentia caulina axillarisve perspicue patenti-pilosa pilis brunneis multiloculatis ac minute glandulo-capitatis, masculina ±9-flora; pedunculo brevi sub 6 mm. longo, pedicellis gracilibus sub 8 mm. longis, bracteis subulatis sub 3 mm. longis, sepalis subulato-lanceolatis tergo glabrescentibus 4–5 mm. longis; feminea usque ad 14-flora, pedunculo demum usque ad 1.2 cm. longo, pedicellis crassiusculis brevioribusque, sepalis latioribus ovato-attenuatis. Capsulae glabrae vel aegre irregulariterque tomentellae, valvis usque ad 3.5 cm. longis et 2.9 cm. latis. Semina usque 7 mm. longa, 5 mm. lata, 4 mm. crassa.

Inflorescence cauline or axillary, conspicuously spreading-pilose with multiloculate and minutely glandular-capitate brown hairs, the staminate ±9-flowered, its short peduncle under 6 mm. long, pedicels slender and under 8 mm. long, the subulate bracts under 3 mm. long, sepals subulate-lanceolate as well as glabrescent and 4–5 mm. long; pistillate inflorescence up to 14-flowered, its peduncle finally up to 1.2 cm. long, pedicels rather thickish and shorter, sepals wider and ovate-attenuate. Capsules glabrous or weakly and irregularly tomentulose, their valves up to 3.5 cm. long and 2.9 cm. wide. Seeds up to 7 mm. long, 5 mm. wide, 4 mm. thick.

Specimens examined: *Charles N. Forbes* 1,676-*O*, Palehua, Waianae Range, Isl. Oahu, Apr. 1-4, 1911 (type, Bish.: cotypes, Berl.; Field).

The pilose inflorescence distinguishes from the species proper and somewhat suggests var. *spathulatum*, but the multiloculate and glandular nature of the hairs, also the more attenuate sepal-tips and more nearly or even completely glabrous capsules offer a distinction from that variety.

Pittosporum glabrum var. **spathulatum subcandidum** f. nov.—Foliorum laminae facie inferiore irregulariter sparsimque (petioli surculique dense) tomentosae tomento adpresso ac plerumque albo (raro flavido-brunneo), vel demum glabratae.

Foliar blades clothed irregularly and sparsely on lower surface (petioles and young shoots densely) with appressed and commonly white (rarely yellowish-brown) tomentum, or finally glabrate.

Specimens examined: *F. R. Fosberg* 13,402, tree, 5 meters tall, at edge of moist forest, alt. 600 meters, Manawai-Kahananui Ridge, Isl. Molokai, Dec. 24, 1936 (type, Field, 2 sheets: cotypes, Berl.; Bish.).

The type specimens lack flowers but have a total of ten mature fruits. These are identical with those of var. *spathulatum* proper found on Oahu (type locality for that variety) and the only distinctive character remaining appears to be that of the tomentum on the youngest shoots, on the under surfaces of the leaves, and on the petioles when young. The leaves and youngest shoots of var. *spathulatum* proper are regularly glabrous.

Pittosporum glabrum var. **spathulatum hypoleium** Degener & Sherff f. nov.—Formae *subcandido* similis sed pubescentia pro maxima parte flava.

Similar to f. *subcandidum* but the pubescence for the most part yellow. On the type the pubescence is accompanied by considerable pulverulence but this appears to be foreign.

Specimens examined: *Otto Degener & H. Ochiae* 10,988*a*, on exposed ridge in tapestry forest, ridge northeast of Nuuanu Pali, Isl. Oahu, Nov. 20, 1926 (type, Field).

The large spray of the type sheet lacks flowers but is accompanied by a mature capsule, this in a separate packet.

Pittosporum glabrum Tinifolium var. nov.—Rami glabrati, non robusti (pro speciminibus visis sub 5 mm. crassi). Folia ramorum apices versus disposita, novellissima valde pubescentia mox glabra vel infra sparsissime porrigini-setosa, graciliter petiolata petiolo 0.5–2 cm. longo, lamina oblanceolata vel oblonge elliptico-lanceolata, acuminata, membranacea, subobscure nervata, 6–11 cm. longa et 2–3.3 cm. lata. Flores ignoti. Inflorescentia fructifera caulina, subsessilis, cum ±5 capsulis. Capsula pedicellata pedicello 4–10 mm. longo; valvis demum planis et plus minusve rotundis, sub 2 cm. longis et 1.8 cm. latis, extus glabratis vel sparsim setosis sed (siccis) minute rugosis (sub vitro lenticulariformi multum convolutis), rostro circ. 1.5 mm. longo. Semina atra, plus minusve plana, angulata, faciebus glabra et sublaevia.

Branches glabrate, not robust (less than 5 mm. thick for the specimens seen). Leaves disposed toward tips of branches, youngest ones very pubescent but soon glabrous or on lower surface very sparsely scurfy-setose, slenderly petiolate, petiole 0.5–2 cm. long; blade oblanceolate or oblongly elliptic-lanceolate, acuminate, membranaceous, subobscurely nerved, 6–11 cm. long and 2–3.3 cm. wide. Flowers unknown. Inflorescence (with capsules) cauline, subsessile, capsules ±5. Capsule pedicellate, pedicel 4–10 mm. long; valves finally flat and more or less rounded, under 2 cm. long and 1.8 cm. wide, externally glabrate or sparsely setose but (at least when dry) minutely rugose (under a lens appearing much convoluted), beak about 1.5 mm. long. Seeds black, more or less flat, angulate, glabrous and smoothish on faces.

Specimens examined: *Charles N. Forbes* 1,668–*M*, on ridge at side of Kipakula, southeasternmost East Maui, Nov. 17, 1917 (type, Bish.: cotypes, Berl.; Field).

The type collection was in fruiting condition only and thus inadequate for a full description. The available data have therefore been set forth rather fully here, with the hope that they will aid in the collection of additional specimens in the type locality. The leaves are thinner than in most *P. glabrum* proper (which is unknown from Maui) and the scurfy-setose pubescence found scattered or in tiny patches on the lower leaf-surfaces suggests somewhat *P. glabrum* var. *spathulatum* f. *subcandidum* of southeasternmost Molokai. However, the capsules are smaller than in f. *subcandidum* and much less pubescent, in fact almost or essentially glabrous; also, the leaves are thinner.

Pittosporum Hosmeri Saint-Johnii var. nov.—Frutex ±1.8 m. altus. Folia submatura maturaque petiolo 1.5–3.5 cm. longa lamina 10–20 cm. longa et 4–7 cm. lata, utrinque glaberrima vel infra irregulariter sparsimque adpresso-setosa setis gracilibus acribus subrectis saltem demum albis. Flores subflavido-albi, fragrantissimi. Capsula matura aurantiaca, glabra, 3.6–4.6 cm. longa, 3.5–4.6 cm. crassa, 3–4 cm. lata. Semina 8–9 mm. longa et 6–6.5 mm. lata.

Shrub ±1.8 meters tall. Leaves submature and mature, petiole 1.5–3.5 cm. long; blade 10–20 cm. long and 4–7 cm. wide, on both surfaces very glabrous, or irregularly and sparsely appressed-setose beneath with slender, sharp, nearly straight, at least finally white setae. Flowers yellowish-white, very fragrant. Mature capsule orange-colored, glabrous, 3.6–4.6 cm. long, 3.5–4.6 cm. thick, 3–4 cm. wide. Seeds 8–9 mm. long and 6–6.5 mm. wide.

Specimens examined: *Harold Saint John, J. W. Coulter, E. Y. Hashimoto, & D. D. Mitchell* 11,442, shrub 6 feet tall, flowers creamy-white and very fragrant, ripe fruit orange-colored, alt. 4,000 feet, Puuwaawaa, Puu Hualalai, Isl. Hawaii, Dec. 30, 1931 (type, Bish.: cotypes, Berl.; Field).

While discovered in the same locality as that for the species proper, var. *Saint-Johnii* is different in its leaves. Incidentally, it is a shrub and perhaps does not become a tree. Its leaves are glabrous beneath or at most sparsely appressed-setose with white, straightish hairs; only when emerging from the bud are they closely rufous-pubescent. In the species proper, also in the var. *longifolium* Rock, the leaves are more or less permanently dense-tomentose beneath with a light to dark brown or reddish-brown wool.

Pittosporum insigne Fosbergii var. nov.—Frutex vel arbor 3–6 m. alta. Varietati *Lydgatei* similis sed differt: foliis saepius 3.5–5 cm. latis, supra plerumque magis coriaceis nitidisque ac rugosius reticulato-venulosis, novellis et rami parte terminali valde adpresso-hispidis demum glabrescentibus vel rarius (siccis fulvo- vel albo-) pubescentibus, lamina latiore et apicem versus minus attenuata; pedunculo sub 1.5 cm. longo.

Shrub or tree 3–6 m. tall. Similar to var. *Lydgatei* but differs: leaves more often 3.5–5 cm. wide, above commonly more coriaceous and glossy also more rugosely reticulate-veiny, the nascent ones also terminal portion of branch strongly appressed-hispid but finally glabrescent or more rarely (in dry state brown- or white-) pubescent; blade broader and toward apex less attenuate; peduncle under 1.5 cm. long.

Specimens examined (all from Isl. Molokai): *Lucy May Cranwell & Carl Skottsberg* 2,550, in bog, Pepeopae, Jul. 9, 1938 (Goth.); *Otto Degener* 10,958, in mossy rain-forest, near Puu o Wahaula, Apr. 17, 1928 (Berl.; Deg.; Field, 2 sheets); *Degener* 10,960, in rain-forest, west of Pepeopae, Apr. 12, 1928 (Berl.; Deg.; Field); *Charles N. Forbes* 445-*Mo*, Kalapamoa, August, 1912 (Bish.); *Joseph F. Rock* 6,164, on ridge back of Kamoku, March, 1910 (Arn.; Berl.; Bish.; Del.; Field; Kew); *Saint John, Baker, Coulter, Fosberg, & Yuncker* 12,511, tree 12 feet tall, in wet forest, alt. 3,900 feet, Puu o Kaeha, Kawela, Dec. 23, 1932 (Bish.; Field; Yunck.); *iidem* 12,604, shrub 10 feet tall, flowers below leaves on stem, on steep *pali* [Hawaiian for bluff, cliff, or precipice], in rain-forest, ridge between Hanalilolilo and Pepeopae, Waikolu Valley, Kawela, Dec. 25, 1932 (type, Bish.: cotype, Field); *Saint John, J. Dunn, William B. Storey* 13,258, tree 20 feet tall, on wooded ridge, alt. 2,400 feet, Kukuinui Ridge, Wailau Valley, Jul. 4, 1933 (Field).

This handsome shrub or small tree is named after Dr. F. R. Fosberg, one of the type collectors, out of grateful appreciation of his assistance in my studies on the Hawaiian species of *Pittosporum*. Dr. Fosberg, as a student in the Hawaiian Islands during recent years, collected, either individually or jointly with one or more other botanists, a vast quantity of invaluable herbarium material. All of his many *Pittosporum* specimens he placed at my disposal for study and determination.

In *P. insigne* proper, of Maui, some of the flowers are borne terminally, but in var. *Fosbergii* the flowers are apparently always, as indicated on the type label, cauline. In *P. insigne* var. *Hillebrandii*, which, like var. *Fosbergii*, inhabits eastern Molokai, the fruits are more smoothish and the leaves are usually thinner, also less rugose and glossy above. At times, however, specimens of var. *Hillebrandii* offer an approach in one or two of these three respects.

In most of the material the leaves have shed all or most of their pubescence but in a few collections this has persisted over half or more of the lower surface. These may be separated as:

Pittosporum insigne var. **Fosbergii pertinax** Degener & Sherff f. nov.—Varietati *Fosbergii* ipsi valde similis (floribus ignotis) sed foliorum faciebus inferioribus non vel plus minusve tarde glabrescens, setis numerosissimis albis valde adpressis demum saepe in tegimentum tenuissimum subporriginosum valde imperfectum hac atque illac coalescentibus.

Very similar to var. *Fosbergii* proper but with lower leaf-surfaces more or less tardily glabrescent, their very numerous white setae strongly appressed and finally often coalescing here and there into a very thin, somewhat scurfy, highly imperfect integument.

Specimens examined: *Otto Degener* 10,956, in moderately dry locality, ravine northwest of Puu Makaliilii, Molokai, May 21, 1928 (Field); *Degener* 10,959, in forest, ravine just south of Maunahui, Molokai, Apr. 15, 1928 (type, Field).

The specimens cited would seem sufficiently distinct from var. *Fosbergii* proper to warrant separate varietal status if the strikingly peculiar character of pubescence were more constant. Var. *Fosbergii* proper, however, shows at times small bits of the same scurfy pubescence that occurs here. Hence a separation of the two forms must depend upon the comparative amounts of pubescence on the mature leaves.

Pittosporum insigne var. **Hillebrandii** (Lévl.) comb. nov.; *Pittosporum Hillebrandii* Lévl. Fedde Repert. 10: 121. 1911.

Specimens examined (all from Isl. Molokai): *Otto Degener* 10,977, in open woods, near Brown's Ranch, eastern Molokai, Oct. 14, 1927 (Berl.; Deg.; Field); *Abbé Urbain Faurie* 10, Pukoo, May, 1910 (Arn.; Del.); Faurie 15, same locality and date (Arn.; Del., 2 sheets); *Faurie* 16, same locality, June, 1910 (Arn.; Del., 2 sheets); *Faurie* 17, same locality, May, 1910 (type, Par.: cotype, Bish.); *Charles N. Forbes* 299-*Mo*, same locality, July, 1912 (Berl.; Bish.; Field, 2 sheets); *F. R. Fosberg* 13,364, tree 5 meters tall, alt. 850 meters, in rain-forest, on sloping plateau east of Mapulehu Valley, December 23, 1936 (Bish.; Field); *Joseph F. Rock* 7,002, Wailau Pali, April, 1910 (Arn., 2 sheets; Berl.; Bish.; Field); *Rock* 7,007, same locality and date (Bish.).

Some specimens of var. *Hillebrandii* offer an illusory resemblance to *P. glabrum* var. *spathulatum* but must not be equated with that plant, since var. *Hillebrandii* has usually larger fruits (these more often oblong in outline, not more often broader than long), their faces more rugose and much less tomentose or even glabrate. Its leaf-habit, too, is usually somewhat different.

Pittosporum insigne micranthum var. nov.—Folia plerumque paulo minora lamina sub 11 cm. longa et sub 5 cm. lata, supra parce nitida. Inflorescentiae axis sub 2.5 cm. longus; bracteis lineari-subulatis tomentosis vel irregulariter glabratis 3–4 mm. longis; sepalis ovatis vel ovato-oblongis, tomentosis vel extus saepe glabratis, circ. 2 mm. longis; corollae tubo tantum circ. 6–7 mm. longo, lobis circ. 2–2.5 mm. longis. Capsula minus rugosa, primum tomentosa mox subglabrata, ±2.3 cm. longa et ±1.5 cm. lata; seminibus atris, valde perspicueque tuberculatis, ±6.5 mm. longis et ±5.5 mm. latis.

Leaves commonly a little smaller, blade under 11 cm. long and under 5 cm. wide, scarcely glossy above. Axis of inflorescence under 2.5 cm. long; bracts linear-subulate, tomentose or irregularly glabrate, 3–4 mm. long; sepals ovate or ovate-oblong, tomentose or outwardly often glabrate, about 2 mm. long; corolla's tube only about 6–7 mm. long, lobes about 2–2.5 mm. long. Capsule less rugose, at first tomentose presently subglabrate, ±2.3 cm. long and ±1.5 cm. wide; seeds black, strongly and conspicuously tuberculate, ±6.5 mm. long and ±5.5 mm. wide.

Specimens examined: *Otto Degener* 10,963, in arid lava region, Ulupalakua, East Maui, June 23, 1927 (Berl.; Deg.; Field, 2 sheets); *Charles N. Forbes* 1,800–*M*, on south slope of Haleakala, Kanaio, East Maui, Mar. 1, 1920 (type, Bish.: cotypes, Berl.; Field).

Pittosporum insigne pelekunuanum var. nov.—Ramus (parte terminali sub 5 cm. longa visa) etiam gemma terminalis dense albido-tomentulosa. Folia (tantum 2 principalia visa) magna, petiolo ±2.3 cm. longo; lamina oblonga vel obovato-oblonga, apice breviter acuminata, basim versus subabrupte angustata, demum plus minusve glabrescenti (paucis setis reliquis solitariis vel confertis valde adpressis saepius argenteo-nitidis), ±2.9 dm. longa et ±9–10 cm. lata, supra sublaevi et non nitida. Capsula (unica matura visa) circumambitu oblonga, rugosa et sulcata, dense fulvo- vel albo-tomentulosa, circ. 2.2 cm. longa et circ. 1.6 cm. lata.

Branch (terminal portion less than 5 cm. long seen) also terminal bud densely whitish-tomentulose. Leaves (only two principal ones seen) large, petiole ±2.3 cm. long; blade oblong or obovate-oblong, at apex shortly acuminate, toward base subabruptly narrowed, finally more or less glabrescent (the few remaining setae solitary or clustered, much appressed, more often silvery-glossy), ±2.9 dm. long and ±9–10 cm. wide, above smoothish and not glossy. Capsule (a single mature one seen) oblong in outline, rugose and sulcate, densely brownish- or white-tomentulose, about 2.2 cm. long and about 1.6 cm. wide.

Specimens examined: *Charles N. Forbes* 586–*Mo*, Pelekunu Valley, Molokai, September, 1912 (type, Bish.).

In eastern Molokai *Pittosporum sulcatum*, through its var. *Remyi*, and *P. insigne*, through its vars. *Fosbergii* and *Hillebrandii*, tend to approach each other somewhat, possibly through hybridization. Thus, for example, several specimens referred to *P. sulcatum* var. *Remyi* (*e.g.*, Forbes 250-*Mo*) because of leaf characters have capsules more typical of the average ones found in *P. insigne* var. *Fosbergii*. Forbes 586-*Mo* represents, however, a plant that cannot well be accounted for as an intermediate. Its leaves are much too large to suggest either species. The type has two leaves left substantially intact and a portion of a third. They are so large as to suggest leaves of juvenile or second-growth shoots found in some other arborescent genera, but they are borne on an apparently normal, older branch. Then, too, they are accompanied by the single ripe and partly opened capsule (this unattached and filed in packet on sheet). We have also the consideration that Forbes was a careful collector and would doubtless never have obtained atypic leaves without making a note to that effect. It is unfortunate that no flowers were obtained, but on the basis of the evidence at hand the plant seems best construed as a very large-leaved variety of *P. insigne*, with the fruit densely tomentulose.

Pittosporum kahananum sp. nov.—Frutex laxus vel arbor patens. Folia numerosa ad et subverticillate infra ramorum apices conferta, sicca brunneo-viridia, petiolo glabro 0.8–2 cm. longo, lamina oblongo-obovata, coriacea, apice rotundata vel obtusa, margine revoluta, nascente dense adpresso-hispida, supra mox glabra atque impresse reticulato-venosa, infra subperspicue elevato-venosa et demum glabrescente vel moderate vel etiam densissime adpresso-hispida setis albis vel brunneis, 4–8 cm. longa et 1.2–2.5 cm. lata. Inflorescentiae caulinae et axillares, sessiles, 1–8-florae. Tantum flores masculini visi. Bracteae nunc ovatae nunc subulatae, pubescentes vel glabrescentes, sub 4 mm. longae. Pedicelli tomentosi, crassi, ±2 mm. longi. Sepala subanguste vel late ovata, apice acuminata vel obtusa, extus moderate adpresso-hispida, margine scariosa, 3.5–4.5 mm. longa. Petala 5 (raro 6), saepius distincta, alba, 12–13 mm. longa (parte terminali expansa oblonga ±4 mm. longa inclusa). Stamina gracilia, ±6.5 mm. longa, pistillo subaequalia vel etiam aequalia. Capsula (unica visa) ovoidea; valvis demum planis, basi subcordato-truncatis, extus valde rugosis et sulcatis aliter plus minusve glabris circ. 3.5 cm. longis et 2–2.3 cm. latis. Semina intense nigra, angulata et paulum scrobiculata, circ. 6.5–7 mm. longa, 5–5.5 mm. lata, 2.5–3 mm. crassa.

Loose shrub or spreading tree. Leaves numerous, clustered at and subverticillately below tips of branches, brownish-green when dry, petiole glabrous and 0.8–2 cm. long; blade oblong-obovate, coriaceous, at apex rounded or obtuse, at margin revolute, when nascent densely appressed-hispid, above presently glabrous and impressedly reticulate-veiny, below somewhat conspicuously salient-veiny and finally glabrescent or moderately or even very densely appressed-hispid with white or brown setae, 4–8 cm. long and 1.2–2.5 cm. wide. Inflorescences cauline and axillary, sessile, 1–8-flowered. Only staminate flowers seen. Bracts now ovate now subulate, pubescent or glabrescent, under 4 mm. long. Pedicels tomentose, thick, ±2 mm. long. Sepals subnarrowly or broadly ovate, at apex acuminate or obtuse, moderately appressed-hispid outside, at margin scarious, 3.5 4.5 mm. long. Petals 5 (rarely 6), more often distinct, white, 12–13 mm. long (including expanded terminal portion, this oblong and ±4 mm. long). Stamens slender, ±6.5 mm. long, subequal or even equal to pistil in length. Capsule (a single one seen) ovoid; valves finally flat, at base subcordate-truncate, externally very rugose and sulcate, otherwise more or less glabrous, about 3.5 cm. long and 2–2.3 cm. wide. Seeds intensely lustrous-black, angled and somewhat wrinkled, about 6.5–7 mm. long, 5–5.5 mm. wide, 2.5–3 mm. thick.

Specimens examined: *F. R. Fosberg* 12,248, loose shrub 1 meter tall, flowers cream-white, odor not pleasant, on steep, wet, exposed, bushy slope, alt. 750 meters, Waikane-Schofield Trail, Kahana, Isl. Oahu, Jul. 27, 1935 (Bish.; Field); *Harold Saint John* 10,152, spreading tree, flowers white, alt. 2,400 feet, near the divide, Waikane-Schofield Trail, Kahana, Jan. 19, 1930 (type, Bish.).

The leaf-shape and fruit are much the same as in *Pittosporum sulcatum*. The leaves are very different, however, in that many of them retain a usually dense coating of innumerable, more or less coalesced, white or brown hairs. *P. sulcatum* has glabrous adult leaves and its var. *Remyi* has at the most a very few hairs on the lower leaf-surfaces. *P. cauliflorum* var. *fulvum* is occasionally rather small-leaved and then may superficially resemble *P. kahananum*. That variety can be told at once, however, by the dense tomentum on the younger parts and often on the lower surfaces of the older leaves, also by the tomentose capsules. In *P. kahananum* the hairs are fewer and straighter, justifying the term hispid rather than tomentose, and the capsules are essentially glabrous (though rugose).

Pittosporum napaliense sp. nov. Arbor ±6.5 m. alta, caule ±2 dm. crasso. Folia magna paucaque, alterna vel saepius subverticillate ad vel prope ramorum apices disposita, graciliter petiolata petiolo 2–5.5 cm. longo; lamina nunc oblanceolato-oblonga nunc late obovato-oblonga, apice obtusa vel breviter subacuminata, basi cuneata, submembranacea, supra coriacea saepe nitida mox glabra pallidaque venis non perspicue impressis, infra adpresso-setosa vel porrigini-strigosa setis acribus atque argenteo-albidis demum plus minusve glabrata, saepius 1.5–2 dm. longa et 5–8.5 cm. lata. Inflorescentia subumbelliformis nunc terminalis nunc axillaris vel caulina, dense tomentosa, pedunculo plerumque 1–3 (rarius usque ad 5) cm. longo. Flores numerosi (saepe 20–30), pedicellis 3–7 mm. longis. Bracteae nunc ovato-lanceolatae nunc lanceolato-lineares, 4–8 mm. longae. Sepala tomentosa late ovata, obtusa, 4–5.5 mm. longa. Corolla glabra, tubo tantum circ. 7–8 mm. longo, lobis patentibus ovatis ±5 mm. longis. Ovarium anguste ovatum, dense tomentosum, 3–4 mm. longum; stylo subaequaliter longo, prope apicem glabro. Stamina sterilia circ. 3–3.5 mm. longa, fertilia ignota. Capsula tantum circ. 1.5 cm. longa (stylo gracili circ. 3.5 mm. longo excluso) et lata, moderate obcompressa, utrinque truncata vel subcordata, tomento griseo-brunneo brevi denso vestita vel demum irregulariter glabrescens nigrescensque. Semina nigra, irregulariter angulata, 5.5–6.5 mm. longa.

Tree ±6.5 meters tall, stem ±2 dm. thick. Leaves large and few, alternate or more often subverticillately disposed at or near tips of branches, slenderly petiolate, petiole 2–5.5 cm. long; blade now oblanceolate-oblong now widely obovate-oblong, at apex obtuse or shortly subacuminate, at base cuneate, submembranaceous, above coriaceous often glossy presently glabrous and pallid with veins not conspicuously impressed, below appressed-setose or scurfy-strigose with sharp and silvery-whitish setae but finally more or less glabrate, more often 1.5–2 dm. long and 5–8.5 cm. wide. Inflorescence subumbelliform, now terminal now axillary or cauline, densely tomentose, peduncle commonly 1–3 (more rarely up to 5) cm. long. Flowers numerous (often 20–30), pedicels 3–7 mm. long. Bracts now ovate-lanceolate now lanceolate-linear, 4–8 mm. long. Sepals tomentose, widely ovate, obtuse, 4–5.5 mm. long. Corolla glabrous, tube only about 7–8 mm. long; lobes spreading, ovate, ±5 mm. long. Ovary narrowly ovate, densely tomentose, 3–4 mm. long, subequal to style in length, glabrous near apex. Stamens: sterile about 3–3.5 mm. long, fertile unknown. Capsule only about 1.5 cm. long (excluding the slender style, this about 3.5 mm. long)

and wide, moderately obcompressed, at both ends truncate or subcordate, clothed with dense short gray-brown tomentum or finally irregularly glabrescent and darkening. Seeds glossy-black, irregularly angulate, 5.5–6.5 mm. long.

Specimens examined: *Otto Degener & Emilio Ordoñez* 12,616, forest tree, 20 feet tall, Hanakoa, Napali Coast, Isl. Kauai, Dec. 24, 1939 (Berl.; Deg.; Field, 3 sheets); *Harold Saint John & F. R. Fosberg* 13,864, tree, 20 feet tall, trunk 8 inches in diameter, leaves firm, clear-green above, silvery-green beneath, common in moist woods, alt. 500 feet, Hanakapiai, Hoolulu Stream, Napali District, northwest Kauai, Dec. 30, 1933 (type, Bish.: cotypes, Berl.; Field, 2 sheets; Kew).

Easily recognized by its large, thinnish leaves, which are more or less whitish-strigose beneath, its proportionately large calyces or small corollas, and its small capsules. These last are somewhat tuberculate-rugose if and when they shed their tomentum, but do not become deeply grooved; their valves finally have at most a shallow, median, lengthwise furrow.

Pittosporum sulcatum Rumicifolium var. nov.—Frutex forsitan interdum arbuscula ±2.5 m. alta. Folia numerosa ad ramorum apices disposita, sicca brunneo-viridia, petiolo gracili 1.5–3.5 cm. longo, lamina anguste spathulato-oblanceolata, apice acuta vel sensim attenuata, basi elongate attenuata, supra coriacea et minute impresso-reticulata, infra manifeste elevato-venosa, primum (immaturissima) dense adpresso-pilosa mox glabrata vel glabra, 6–13 cm. longa et 1–2.5 cm. lata. Flores ignoti. Pedunculi caulini vel terminales demum usque ad 5 vel 8 mm. longi, pedicellis 3–6 mm. longis. Capsula glabra glabratave; valvis 1.8–2.5 cm. longis latisque.

Shrub or perhaps at times a small tree, ±2.5 meters tall. Leaves numerous, disposed at tips of branches, brownish-green when dry, petiole slender and 1.5–3.5 cm. long; blade narrowly spatulate-oblanceolate, at apex acute or gradually attenuate, at base elongately attenuate, above coriaceous and minutely impressed-reticulate, below manifestly salient-veiny, at first (when very immature) densely appressed-pilose, presently glabrate or glabrous, 6–13 cm. long and 1–2.5 cm. wide. Flowers unknown. Peduncles cauline or terminal, finally up to 5 or 8 mm. long, pedicels 3–6 mm. long. Capsule glabrous or glabrate; valves 1.8–2.5 cm. long and wide.

Specimens examined: *Otto Degener* 11,005 *pro parte*, in sunny rain-forest, above Pauoa Flats, Honolulu, Isl. Oahu, Jul. 3, 1923

(N.Y.); *F. R. Fosberg* 8,973, bush 2.5 meters tall, in wet forest, alt. 680 meters, peak at head of Pauoa Flats, Pauoa, Oct. 30, 1932 (type, Field); *Joseph F. Rock* 10,073, Manoa Valley, Oahu, September, 1912 (Bish.; Gray).

In its more slender and somewhat more congested leaves, this variety appears sufficiently separable from *P. sulcatum* proper, to which it is allied in its glabrous or glabrate capsules. In the shape of its leaves, however, it is closer to var. *Remyi*.

Pittosporum dolosum sp. nov.—Arbor ±5 m. alta. Folia terminaliter conferta, saepe suberecta, sicca brunneo-viridia vel rufulo-brunnea, petiolo 1–3 cm. longo, lamina spathulato-obovata, basi subelongato-cuneata, apice plus minusve acuminata, facie superiore mox glabra subcoriacea saepe nitida minute impresso-reticulata, margine minute ac saepe grosse revoluta, facie inferiore manifeste elevato-venosa primum (juvenissima) hispida mox fere glabrata sed plerumque sparsissime adpresso-setosa, 8–12 cm. longa et 2–4.3 cm. lata. Inflorescentia ±5-flora, caulina vel raro terminalis. Pedunculus tomentosus, 4–6 mm. longus; bracteis lineari-subulatis, subglabratis, sub 5 mm. longis; pedicellis tomentosis, 3–5 mm. longis. Sepala ovata, pubescentia, 3–5 mm. longa. Corollae tubus 7–9 mm. longus, lobis circ. 5 mm. longis. Capsula oblongo-ovoidea vel cordato-ovoidea, rugosa sulcataque, demum glabrata vel sparsissime pubescens, 1.6–2.7 cm. longa stylo persistente ±3 mm. longo excluso et ±2 cm. lata. Semina atra, plana vel subplana, laevia, 7–8 mm. longa.

Tree ±5 meters tall. Leaves crowded at tips of branches, often suberect, brownish-green or reddish-brown when dry, petiole 1–3 cm. long; blade spatulate-obovate, at base subelongate-cuneate, at apex more or less acuminate, at margin minutely also often coarsely revolute, 8–12 cm. long and 2–4.3 cm. wide; upper surface presently glabrous, subcoriaceous, often glossy, minutely impressed-reticulate; lower surface manifestly salient-veiny, at first (when very young) hispid, presently almost glabrate but commonly very sparsely appressed-setose. Inflorescence ±5-flowered, cauline or rarely terminal. Peduncle tomentose, 4–6 mm. long; bracts linear-subulate, subglabrate, under 5 mm. long; pedicels tomentose, 3–5 mm. long. Sepals ovate, pubescent, 3–5 mm. long. Corolla's tube 7–9 mm. long, lobes about 5 mm. long. Capsule oblong-ovoid or cordate-ovoid, rugose and sulcate, finally glabrate or very sparsely pubescent, 1.6–2.7 cm. long (the persistent, ±3 mm. long style excluded) and ±2 cm. wide. Seeds black, flat or flattish, smooth, 7–8 mm. long.

Specimens examined (all from Isl. Oahu): *Otto Degener, Kwan Kee Park, & Manuel Kwon* 11,003, in rain-forest, Pig-God Trail, Punaluu, Jan. 17, 1932 (Deg.; Field; with foliar aspect of *P. sulcatum* and perhaps hybridized); *Abbé Urbain Faurie* 9, alt. 800 meters, Punaluu, May, 1910 (Arn.; Del.); *Charles N. Forbes*, between Punaluu and Kaipapau, Koolauloa Mts., Nov. 14–21, 1908 (Bish.); *Forbes & Dr. C. M. Cooke, Jr.*, same locality, May 3–8, 1909 (Berl.; Bish.; Field); *Forbes*, with *C. L. Thompson*, same locality, May 8–13, 1909 (Berl.; Bish.; Field); *F. R. Fosberg* 9,540, tree 5 meters tall, in wet forest, alt. 740 meters, divide between Kahana and Waianae Uka, Waikane-Schofield Trail, May 14, 1933 (Bish.; Field, 2 sheets); *Joseph F. Rock*, Koolau Mts., 1908 (Arn.); *Rock* 23 (173), same locality, Dec. 3–14, 1908 (Field); *Rock* 23 (392), Punaluu, Dec. 24–29, 1908 (Field); *Rock* 23 (781), same locality, Dec. 3–14, 1908 (Kew); *Rock* 170, Punaluu Mts., Dec. 3–14, 1908 (Bish.); *Rock* 418, same locality, Dec. 24, 1908 (type, Gray: cotype, Bish.); *Rock* 535, above the Valley of Kaliuwaa, Punaluu, Dec. 24, 1908 (Arn.); *Harold Saint John* 10,584, on crest of ridge, alt. 2,200 feet, Punaluu, Sept. 28, 1930 (Bish.; N.Y.); *Olof H. Selling* 3,676, Punaluu, Sept. 27, 1938 (Goth.).

Rock, who had collected this species in the vicinity of Punaluu, northeastern Oahu, referred it to *P. spathulatum* Mann, by which he meant the recently named *P. sulcatum*. From typical *P. sulcatum* it differs in having its leaves mostly with a few scattered, appressed hairs on the lower surface, their venation usually more pronounced, their color usually more brownish or reddish-brown when dried, their position more nearly ascending or erect and their arrangement more compact, their margins more often loosely rolled underneath (independently of and in addition to the minute revoluteness present in most *Pittosporum* species), etc. The hairs of the lower surface may be lacking on several leaves but nearly always show on some, now toward the base now toward the tip but more consistently along the midvein. The geographic distribution appears restricted to the mountains of the Land-Section Punaluu and of the area slightly southwest.

Pittosporum dolosum aquilonium var. nov.—Frutex ±2 m. altus forsitan arbuscula. Folia elongatiora, petiolo usque ad 4 cm. longo, lamina usque ad 2 dm. longa et 5 cm. lata, apice saepius acuminata. Ovarium dense tomentosum. Capsula matura subglabrata.

Shrub ±2 meters tall or perhaps becoming a small tree. Leaves more elongate, petiole up to 4 cm. long; blade up to 2 dm. long and 5 cm. wide, at apex more often acuminate. Ovary densely tomentose. Mature capsule subglabrate.

Specimens examined (all from Isl. Oahu): *Otto Degener, Emilio Ordoñez, & J. Kepaa* 12,779, in woods, Peahinaia Trail, Apr. 28, 1940 (Deg.; Field); *F. R. Fosberg* 8,850, bush, 2 meters tall, in wet forest, alt. 500 meters, South Ridge, South Helemanu Gulch, Paalaa, Koolau Mts., Sept. 25, 1933 (Bish.; Field); *Frank Kitamura*, on open, moist slope, alt. 1,450 feet, ridge of South Opaeula Gulch, Paalaa, Sept. 24, 1933 (Bish.); *Harold Morley* 19, in moderate forest, alt. 1,600 feet, ridge south of South Opaeula Gulch, Paalaa, Sept. 24, 1933 (Bish.); *Amy Suehiro*, South Opaeula Ridge, Sept. 25, 1935 (type, Bish.).

The leaves commonly retain a few appressed setae close to the midvein, on the lower surface, and thus suggest *P. sulcatum* var. *Remyi*. They average much larger, however, than in that variety; moreover, the mature capsules are subglabrate, not pubescent, in most of the large and small surface grooves. They are approached in size by those found on some specimens of *P. sulcatum* proper of the Kaala region in Oahu. The numerous Kaala specimens examined for *P. sulcatum* proper, however, invariably have the leaves glabrous on both surfaces when mature. The foliar habit seems to place the type plant most logically as a variety under *P. dolosum*, from which it can be told easily by its larger leaves. These have blades mostly 12–20 cm. not 8–12 cm. long. Var. *aquilonium*, furthermore, grows considerably west of the divide of the Koolau Mountains, while *P. dolosum* itself grows on the eastern side.

Pittosporum Forbesii sp. nov.—Rami novelli pubescentes. Folia numerosa, ramorum apices versus conferta, petiolata petiolo subgracili 5–13 mm. longo; lamina obovata vel late oblongo-oblanceolata, apice obtusa vel rotunda, basi cuneato-angustata, plerumque 5–8 cm. longa et 1.8–3 cm. lata, primum dense tomentosa tomento rufo-brunneo vel mox argenteo, demum supra (rarius etiam infra) irregulariter vel omnino glabra. Flores ignoti. Inflorescentiae fructiferae caulinae, breviter (circ. 5–7 mm.) pedunculatae, pedicellis tantum 1–3 mm. longis. Capsula parva, 1.5–2 cm. longa, circumambitu oblongo-ovata; valvis demum planis, obovatis, sub 2 cm. latis, extus primum tuberculatis ac dense albido-tomentosis demum fere glabratis et non tuberculatis sed sub vitro lenticulariformi multum minuteque convolutis. Semina intense atra, crassa, 4–5 mm.

longa, omnino vel faciebus exceptis rugosa convolutaque. Stylus primum vix 2 mm. longus, demum (pro capsulae rostro) circ. 1–1.5 mm. longus.

Nascent branches pubescent. Leaves numerous, crowded toward tips of branches, their somewhat slender petiole 5–13 mm. long; blade obovate or widely oblong-oblanceolate, at apex obtuse or rounded, at base cuneate-narrowed, commonly 5–8 cm. long and 1.8–3 cm. wide, at first densely tomentose with reddish-brown or presently silvery tomentum, finally above (more rarely also below) irregularly or entirely glabrous. Flowers unknown. Fruit-bearing inflorescences cauline, shortly (about 5–7 mm.) pedunculate, pedicels only 1–3 mm. long. Capsule small, 1.5–2 cm. long, in outline oblong-ovate; valves finally flat, obovate, under 2 cm. wide, outwardly at first tuberculate and densely whitish-tomentose finally almost glabrate and not tuberculate but under a lens much and minutely convoluted. Seeds intensely black, thick, 4–5 mm. long, rugose and convoluted all over unless on faces. Style at first scarcely 2 mm. long, finally (as a capsular beak) about 1–1.5 mm. long.

Specimens examined: *Charles N. Forbes* 122–*Mo*, on slopes of Puu Kolekole, Molokai, July, 1912 (type, Bish.).

Probably best regarded as a sister species to *Pittosporum Terminalioides*, a species not known as yet from the Island of Molokai. Indeed, the collector, Mr. Forbes, wrote of it on the type sheet: "Probably related to *P. terminaloides* [*sic*]. May be new. Glabrous small capsule. No flowers yet." *P. Terminalioides* is a species which usually can be identified rather easily and yet which varies so much in most of its characters as to invalidate most positions assigned to it in a key. It is probably best separated from *P. Forbesii*, aside from geographic considerations, by the upper surfaces of the leaves. These as a rule are soon glabrous or glabrate, while in *P. Forbesii* most of the upper leaf-surfaces retain over considerable areas a thin coating of densely matted, silvery hairs.

The species is gratefully dedicated to Mr. Forbes, who, before his unfortunate death some twenty years ago, had greatly assisted my studies with the collection and lending of numerous Hawaiian specimens.

Pittosporum argentifolium sp. nov.—Verisimiliter arbor parva. Folia subverticillate ad propeque ramorum apices disposita, oblongo-obovata vel -spathulata, crassiuscula, apice aegre acuminata, basi in petiolum gracilem circ. 2–3 cm. longum angustata, primum (saltem facie inferiore) densissime strigoso-tomentosa (pilis

fulvis argenteisve), demum supra glabrata et impresso-venosa infra densissime strigoso-tomentosa vel porrigini-strigosa (pilis argenteo-albis et saepe in integumentum tenuissimum partim transformatis) vel pro minima parte glabrata, lamina 1–2.5 dm. longa et 3–7 cm. lata. Inflorescentiae raro terminales plerumque axillares vel secundum ramos dispositae, tomentosae, superiores sessiles multi- (±20-) florae axe usque ad circ. 1.5 cm. longo, inferiores pauci- (±10-) florae pedunculatae pedunculo 1–2 cm. longo. Pedicelli 3–6 mm. longi; bracteis lineari-subulatis, circ. 7–8 mm. longis. Sepala ovata, fulvo- vel albo-tomentosa, ±4 mm. longa. Corollae tubus ±6 mm. longus. Capsula obcompressa, circumambitu horizontaliter oblonga, ±2 cm. longa et ±2.6 cm. lata; valvis extus non vel vix dorsali-depressis, minutissime tomentellis, parce rugulosis (itaque *P. glabri* var. *spathulati* valvis valde similibus).

Probably a small tree. Leaves disposed subverticillately at and near the tips of the branches, oblong-obovate or -spatulate, somewhat thickish, at apex weakly acuminate, at base narrowed into a slender petiole about 2–3 cm. long, at first (at least on lower face) very densely strigose-tomentose (with brown or silvery hairs), finally on upper surface glabrate and impressed-veiny but on lower surface very densely strigose-tomentose or scurfy-strigose (hairs silvery-white and often partly transformed into a very thin integument) or for a very small part glabrate, blade 1–2.5 dm. long and 3–7 cm. wide. Inflorescences rarely terminal, commonly axillary or variously disposed along branches, tomentose; upper ones sessile, many- (±20-) flowered, axis up to about 1.5 cm. long; lower ones few- (±10-) flowered, pedunculate, the peduncle 1–2 cm. long. Pedicels 3–6 mm. long; bracts linear-subulate, about 7–8 mm. long. Sepals ovate, brown- or yellow-tomentose, ±4 mm. long. Corolla-tube ±6 mm. long. Capsule obcompressed, in outline horizontally oblong, ±2 cm. long and ±2.6 cm. wide; valves externally not or scarcely dorso-depressed, very minutely tomentellous, slightly rugulose (thus strongly similar to the valves of *P. glabrum* var. *spathulatum*).

Specimens examined: *William Hillebrand* 304, Mt. Haleakala, East Maui (Kew); *Joseph F. Rock* 8,656, alt. 3,000 feet, Auahi (Auwahi), East Maui, November, 1910 (type, Arn.: cotypes, Arn.; Berl.; Bish.; Field, 2 sheets; Gray).

This is undoubtedly the same plant as that "collected by Lydgate on the south side of Haleakala" and cited by Hillebrand (Fl. Haw. Isls. 27. 1888) for his "*β* var.? *argenteum*" which he placed under

his new *Pittosporum hawaiiense*, described from the forests of Kona and Kohala of the Island of Hawaii. *P. hawaiiense* was the tenth and last species of *Pittosporum* in Hillebrand's text. His ninth species was *P. confertiflorum* Gray, to which this is closer in most respects. In fact, Rock had labeled his collection of no. 8,656 (*i.e.*, the type collection of *P. argentifolium*), *P. confertiflorum* (on label of type in Arn.). Hillebrand, long previous to writing his Flora of the Hawaiian Islands (and at least prior to July, 1865), had likewise labeled his own no. 304 as *P. confertiflorum.*[1] From *P. confertiflorum*, *P. argentifolium* differs at once in its mostly larger leaves and in having the young shoots not conspicuously tawny- or brown-tomentose, but, instead, rather moderately whitish-strigose. The pedicels of *P. argentifolium* are 3–6 not 6–12 mm. long, and the leaves in age have underneath a thinner investiture of pubescence. This consists of hairs that are less curved, more appressed, and at times passing more or less into a membranous scurf that in places may eventually slough away.

Pittosporum argentifolium sessile var. nov.—Folia saepe paulo minora, pubescentia faciei inferioris magis porriginosa etiam cuti non dissimili. Flores non vel brevissime (±2 mm.) pedicellati, pedunculo saepius brevi et sub 5 mm. longo. Capsulae valvae demum obcordatae, plus minusve tomentellae, planae vel undulatae sed non valde rugosae vel tuberculatae.

Leaves often a little smaller, pubescence of lower surface more scurfy and even similar to a cuticle. Flowers not or very shortly (±2 mm.) pedicellate, peduncle more often short and under 5 mm. long. Capsular valves finally obcordate, more or less tomentellous, flat or undulate but not strongly rugose or tuberculate.

Specimens examined: *Charles N. Forbes* 1,786–*M*, Kanaio, south slope of Haleakala, East Maui, Mar. 1, 1920 (Berl.; Bish.; Del.; Field); *Forbes* 1,964–*M*, Auwahi, south slope of Haleakala, Mar. 14, 1920 (Berl.; Bish.; Field; Gray); *Forbes* 1,981–*M*, south slope of Haleakala, Mar. 15, 1920 (Bish.); *Forbes* 2,052–*M*, flowers cream-white, very fragrant, Auwahi, Mar. 20, 1920 (Berl.; Bish.; Field); *Forbes* 2,062–*M*, Pakiloi, south slope of Haleakala, Mar. 23, 1920 (Bish.); *Forbes* 2,064–*M*, same place and date (type, Bish.).

Very similar to the species proper, except in its more or less sessile florets and fruits, these clustered on a commonly very short peduncle. Rarely one or two fruiting pedicels have elongated to about 6 mm.

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[1] That Hillebrand failed to mention his own no. 304 in publishing the name *argenteum* may be explained by the fact that his plant had been sent to the Hooker Herbarium (where it was received in July, 1865, and later accessioned in the Kew Herbarium) and was therefore not at hand.

Pittosporum argentifolium Rockii var. nov.—A specie ipsa capsulis grosse tuberculatis vel rugosis circumambitu ovatis vel cordato-ovatis ±2.3 cm. longis et ±2 cm. latis differt.

Unlike the species proper in its grossly tuberculate or rugose capsules, these ovate or cordate-ovate in outline, ±2.3 cm. long and ±2 cm. wide.

Specimens examined: *Charles N. Forbes*, mountains above Ukulele, East Maui (Bish.); *Forbes* 192–*M*, in woods near Ukulele, above Olinda, July, 1910 (Bish.); *Joseph F. Rock*, Haleakala, above Ukulele, September, 1910 (Gray); *Rock* 8,610, Ukulele, October, 1910 (type, Arn.: cotypes, Arn.; Berl.; Bish.; Del.; Field, 2 sheets; N.Y.); *Gerrit P. Wilder*, Maui, 1913 (Bish.).

Rock, for whom this variety is named, had labeled one of his specimens (Herb. Gray) *P. confertiflorum*, a species to which he had referred also, as above seen, specimens of *P. argentifolium* proper. In his Indigenous Trees of the Hawaiian Islands (p. 161. 1913) he states: "The capsules of *P. confertiflorum* from the various localities have all possible shapes and forms, but can not be separated successfully into varieties. It will have to remain a polymorphous species." The specimens of *P. argentifolium* proper all were collected, so far as definitely known, at or near Auwahi, near the west end of the southern slope of Mt. Haleakala, in East Maui. Their capsules are of the smoothish (*i.e.*, not rugose or strongly tuberculate) type such as is found in *P. glabrum* and its var. *spathulatum*. The specimens here segregated as var. *Rockii* came from the other side of the same mountain, at the junction of the northeast and northwest slopes. These have capsules of the rugose or strongly tuberculate type such as is found in *P. sulcatum*. Moreover, the capsules are ovate or cordate-ovate in outline, not, as in the species proper, transversely oblong. It seems that the two sets of plants are varietally different, regardless of whatever polymorphism may be proved to exist among the capsules of true *P. confertiflorum*.[1]

Pittosporum cladanthum gracilipes var. nov.—Foliorum tenuiorum obovatorum vel spathulato-obovatorum magnitudine

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[1] Rock (*loc. cit.*) omits all mention of *P. hawaiiense* "var. β? *argenteum*" Hillebr., which, as already remarked above, was undoubtedly equivalent to *P. argentifolium* proper. It may therefore be assumed that Rock overlooked the other characters that are associated with those of the capsules in these two endemic groups of specimens, namely, *P. argentifolium* and its var. *Rockii*.

varietati *reticulato* venis pubescentiaque var. *fulvo* similis; lamina 6–12 cm. longa et 2.5–5 cm. lata. Flores (multi feminei visi) in inflorescentia graciliter pedunculata pedunculo 1–1.7 cm. longo et primum vix 1 (quamquam demum ±4) mm. crasso, sessiles, breves; sepalis acutis; corolla tantum circ. 6–7 mm. longa (parte dilatata subrotunda terminali petalorum separatorum ±2.5 mm. inclusa). Capsula (unica matura visa) moderate rugosa, dense tomentulosa, circ. 2 cm. longa (rostro excluso) et vix 1.8 cm. lata, seminibus circ. 5–6 mm. longis.

Similar in size of the thin, obovate or spatulate-obovate leaves to var. *reticulatum* but in their veins and pubescence to var. *fulvum;* blade 6–12 cm. long and 2.5–5 cm. wide. Flowers (many pistillate ones seen) short, sessile, in a slenderly pedunculate inflorescence, peduncle 1–1.7 cm. long and at first scarcely 1 (but finally ±4) mm. thick; sepals acute; corolla only about 6–7 mm. long including the terminal portion (this dilated, subrotund, ±2.5 mm. long) of the separate petals. Capsule (a single mature one seen) moderately rugose, densely tomentulose, about 2 cm. long (beak excluded) and scarcely 1.8 cm. wide; seeds about 5–6 mm. long.

Specimens examined: *Charles N. Forbes* 380–*L*, Isl. Lanai, September, 1917 (type, Bish.: cotypes, Berl.; Field).

Pittosporum confertiflorum longipes var. nov.—Folia lamina 9–17 cm. longa et 3.5–6.5 cm. lata, supra demum glabrata venis exceptis infra perspicue venosa ac brunneo- vel rufo-brunneo-tomentosa, apice acuminata. Flores ignoti. Inflorescentia terminalis vel demum subterminalis, laxe racemosa, ±15-flora, dense brunneo-tomentosa, axe 2–7 cm. longo (pedunculo gracili usque ad ±3.5 cm. longo incluso), pedicellis gracilibus plerumque 1.3–3.3 cm. longis. Capsula ignota.

Leaf-blade 9–17 cm. long and 3.5–6.5 cm. wide, on upper surface finally glabrate excepting for the veins, on lower surface conspicuously veiny and brown- or reddish-brown-tomentose, at apex acuminate. Flowers unknown. Inflorescence terminal or finally subterminal, loosely racemose, ±15-flowered, densely brown-tomentose, its axis 2–7 cm. long (including slender, up to ±3.5 cm. long peduncle), pedicels slender and commonly 1.3–3.3 cm. long. Capsule unknown.

Specimens examined: *Charles N. Forbes* 28–*M*, on ridges behind Lahaina, West Maui, May, 1910 (type, Bish.: cotype, Field).

The type had been labeled at Bishop Museum as a new species, with the observation that it was probably related to *Pittosporum*

confertiflorum. The leaf-characters combined with a terminal or subterminal inflorescence suggest *P. confertiflorum* var. *Mannii,* but the elongate peduncles, inflorescence-axes, and pedicels separate it at once from that variety. The type has a cluster of five peduncles at the tip of a single branch, each peduncle with several or many pedicels. The cotype has one originally terminal inflorescence and, about 1.5 cm. lower, an axillary inflorescence. As happens in so many forms of *Pittosporum,* a subsequently developed terminal or subterminal shoot has left the upper inflorescence on the cotype subterminal. This shoot has some leaves nearly full-grown but still retaining over most of their upper surface the original brownish tomentum. The older leaves lower down, however, have become completely glabrous above except along some of their veins.

It is unfortunate that flowers and fruits are not at hand. Until they can be had, some doubt must exist, of course, as to the wisdom of assigning this form a varietal status next to var. *Mannii,* or indeed under *P. confertiflorum* at all.

Pittosporum acuminatum waimeanum var. nov.

Folia tenuiora, lamina saepe 1.3–1.7 dm. longa et 4–6.5 cm. lata, non nitida, venulis supra obscuris; petiolo gracili 1–3.5 cm. longo; pedunculis gracilibus plerumque 1–3.5 cm. longis, pauciter (saepius 1- vel 2-) bracteatis bracteis anguste subulatis 3–5 mm. longis; sepalis late ovatis, magne ex parte brunneo-pubescentibus, circ. 3 mm. longis; capsula fere omnino brunneo-pubescenti.

Leaves thinner, blade often 1.3–1.7 dm. long and 4–6.5 cm. wide, not glossy, the small nerves obscure above; petiole slender, 1–3.5 cm. long; peduncles slender, commonly 1–3.5 cm. long, few- (more often 1- or 2-) bracteate; bracts narrowly subulate, 3–5 mm. long; sepals widely ovate, over much of their surface brown-pubescent, about 3 mm. long; capsule brown-pubescent nearly all over.

Specimens examined: *Abbé Urbain Faurie* 3, at altitude of 1,000 meters, Waimea, Isl. Kauai, March, 1910 (type, Par.: cotypes, Arn.; Bish.; Del.).

Pittosporum Terminalioides lanaiense var. nov.—Folia obovata, lamina 6–8 cm. longa et 2–4 cm. lata, petiolo ±1 cm. longa. Pedunculus demum usque ad circ. 2.6 cm. longus, floribus subsessilibus. Capsulae minores, valvis circ. 1.5 cm. longis latisque, parce rugulosis, tomentellis, non sulco mediano longitudinaliter canaliculatis.

Leaves obovate, blade 6–8 cm. long and 2–4 cm. wide, petiole ±1 cm. long. Peduncle finally up to about 2.6 cm. long, the flowers subsessile. Capsules smaller; valves about 1.5 cm. long and wide, scarcely rugulose, tomentellous, lacking a lengthwise, median furrow.

Specimens examined: *George C. Munro* 333, Paoma, Isl. Lanai, April 18, 1914 (type, Bish.); *Munro* 428, same locality and date (Bish.).

The specimens cited had been labeled for *P. Terminalioides* but are apparently quite distinct from the numerous specimens of *P. Terminalioides* examined from Hawaii (to which island the typical form of that species seemingly is restricted). The leaves are proportionately broader and seem consistently small. The capsules are small and lack the shallow, lengthwise, median furrow that usually runs along each valve in the species proper.

Euphorbia Deppeana Boiss. *in* DC. Prodr. 15^{II}: 12. 1862; *Anisophyllum californicum* Kl. & Gke. Abh. Akad. Berl. Phys. 1859: 36. 1860 (*non* Bth.); *Euphorbia pauciflora* Nutt. *ex* Seem. Fl. Vit. 1: 216. 1865–68 (*non* Duf. *nec* Hill); *Euphorbia festiva* Sherff, Bot. Gaz. 97: 589. 1936; *Chamaesyce festiva* (Sherff) Croiz. & Deg. *ex* Deg. Fl. Haw. Dec. 9, 1936.

This species is close to *Euphorbia multiformis* var. *microphylla* Boiss. but appears to differ sufficiently in its leaves, these being at base broadly subcordate or even moderately cordate, on each margin commonly very obsoletely 1–8-denticulate. In *E. multiformis* var. *microphylla* the leaves are more or less cuneately narrowed at base and at the margins entire. As previously remarked by me (*loc. cit.*), Nuttall had designated a plant collected by him on the Island of Oahu as the type of a new species, *E. pauciflora* Nutt. (*nec aliorum*). Later, Boissier, apparently overlooking the minute foliar teeth and broader, more cordate leaf-bases, determined the Nuttall plant as *E. multiformis* H. & A. In his subsequent revision of *Euphorbia* for De Candolle's Prodromus, however, Boissier set off a specifically equivalent specimen as *E. Deppeana* (p. 12). This latter specimen had been collected by Deppe and was labeled as having come from California. This citation of habitat clearly was erroneous, as indeed Boissier suspected, for he wrote: "Annon potius ex similitudine cum praecedentibus [3 speciebus sandwicensibus].... Sandwicensis?"

Several years ago, during my revisional study of the Hawaiian species of *Euphorbia*, the Berlin type of *E. Deppeana* was inaccessible to me, it having been lent elsewhere, among the supposedly North

American specimens of the genus, for another revisional study. The assumption was made perforce, therefore, that the plant collected by Nuttall must be specifically different from *E. Deppeana* Boiss., especially so since Boissier himself had reduced the Nuttall plant to *E. multiformis* but had proposed as new, *E. Deppeana.* Recently, Dr. Louis C. Wheeler, of the American University, very kindly informed me that the Berlin type of *E. Deppeana* was still extant, though still on loan, and that a fragment was at Field Museum of Natural History. Mr. C. A. Weatherby, of Gray Herbarium, has now supplied me with an excellent photograph of the type sheet and fortunately the Field Museum type fragment (formerly in Dr. C. F. Millspaugh's private herbarium) has been found (deposited, as might have been expected, *among the United States specimens*) and compared with it. They are not different from *E. festiva,* which must, therefore, fall into synonymy. It is interesting to note, in passing, that this rare or perhaps no longer extant species of the Hawaiian flora must henceforth commemorate the name of Ferdinand Deppe, who was known because of his Mexican collections and who seems never to have visited the Hawaiian Islands.

Euphorbia multiformis var. **manoana** Sherff, Bot. Gaz. 97: 591. 1936.

In my monographic revision of the *Euphorbiae* of the Hawaiian Islands (Ann. Missouri Bot. Gard. 25: 1–75, pls. 2–11. 1938) the distribution of this variety was given as "Oahu, Lanai, and western Hawaii." Recently, material has been found from two more islands of the Hawaiian archipelago: *Rock & Hashimoto,* Honokohau, West Maui, August, 1918 (Arn.); *Harold St. John et alii* 12,719, Halawa, Molokai (Field).

Labordia hirtella var. **sororia** Sherff, Amer. Journ. Bot. 25: 582. 1938.

This variety was based upon J. F. Rock 8,152 as its type. A more fully labeled duplicate specimen at Arnold Arboretum has Rock & Hammond given as the collectors of this no. 8,152. Besides the originally published data we may note that the type material grew at the bottom of Honokawai Gulch, was a small shrub, and had its flowers pale lemon-colored.

Stenogyne macrantha amicarum Deg. & Sherff, var. nov.

Varietas varietati *Grayi* H. M. affinis sed foliis (rarius irregulariter inciso-dentatis vel -lobatis) infra glabratis vel primum sparsim adpresso-hispidis, caulibus ramisve mox glabratis (ut videtur primum valde adpresso- non patenti-retrorsis) differt. Verticillastra (2 visa) 6-flora. Calyx glabratus, 6–8 mm. longus. Corolla flavus, 1.8–2.2 cm. longa.

A variety similar to var. *Grayi* H. M. but differs: Leaves (these rather seldom irregularly incised-dentate or -lobate) glabrate beneath or at first sparsely appressed-hispid; stems or branches presently glabrate (apparently at first strongly appressed- not spreading-retrorse). Floral whorls (2 observed) 6-flowered. Calyx glabrate, 6–8 mm. long. Corolla yellow, 1.8–2.2 cm. long.

Specimens examined: *Mrs. Helen Shiras Baldwin* (*Otto Degener distrib.* no. 12,903), Makahanaloa, Isl. Hawaii, October, 1940 (Berl.; Deg.; Field); *Miss Ethel Tomoguchi* 2, alt. 2,000 feet, same locality, February 22, 1940 (Field, a sterile branch, apparently of younger hence pubescent material); *eadem* 3 (*Otto Degener distrib.* no. 12,814), shrub or shrubby vine with yellow flowers, alt. 2,200 feet, same locality and date (type, Field).

Mrs. Helen Shiras Baldwin, of Hilo, Isl. Hawaii, under date of May 1, 1940, enclosed with a letter to Mr. Otto Degener several small specimens which had been collected by her "good friend Miss Ethel Tomoguchi." Two of these belong to *Stenogyne* Benth. and somewhat resemble in general habit specimens of *S. Calaminthoides* A. Gray. The smaller, yellow flowers of the one flowering specimen show, however, the affinity to be closer to *S. macrantha* Benth. In my monograph of *Stenogyne* (Bull. Bish. Mus. 136: 59. 1935), this material would run next to *S. macrantha* var. *Grayi* H. Mann under the second *i*, second *j* on page 61 and first *b*, first *c* on page 90. From that variety it differs in the characters noted.[1] The name *amicarum* is accorded this variety in allusion to the two ladies whose mutual friendship resulted in the sending of the type and associate material for our study and determination.

More recently Mrs. Baldwin has collected a large suite of additional specimens in the type locality. They lack flowers, but otherwise match the earlier specimens, except that three of them are anomalous in having all the leaf-blades a third or a half smaller in length and width and incisedly dentate or lobed even to the rachis. In *S. Scrophularioides* Benth. similarly dissected leaf-blades occur, in fact normally, but apparently as a rule toward the base of the stem.

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[1] *S. macrantha* var. *Grayi* H. Mann was founded upon a single specimen, *Jules Remy* 381, Isl. Hawaii, 1851–55 (Herb. Gray). My photograph of that type shows the branches to be, even at the flowering and fruiting stage, densely and conspicuously spreading-hairy, the hairs but weakly retrorse.

It is interesting to note that in the closely related genus *Phyllostegia* Benth., the section *Genuinae* A. Gray is divided into the two subsections *Holophyllae* and *Lobatae* according as the principal leaves are simple or lobulate to pinnately divided.

Stenogyne kanehoana Degener & Sherff, sp. nov.

Caules tetragoni, ramis ultimis dense patenti-tomentosis. Folia opposita, petiolata petiolo tenui patenti-tomentoso 1–2 cm. longo; lamina nunc anguste ovata nunc oblongo-lanceolata, apice subobtusa vel acuta etiam subacuminata, basi nunc rotundata truncatave nunc vix subcordata, aegerrime crenulato-serrata, supra moderate subsparsimve infra densissime adpresso-hispida pilis gracilibus arcuatis acribus canescentibus, plerumque 7–12 cm. longa et 3–5 cm. lata. Verticillastra pauca (1 vel 2 pro ramulo quoque observata), 4- vel 6-flora. Pedicellus dense patenti-pilosus, circ. 8–12 mm. longus. Calyx late obconico-campanulatus, pubescens, manifeste vel demum aegre venosus, tubo 7–10 mm. longo; lobis triangulato-lanceolatis vel -oblongis, apice acutis, plerumque 4–8 mm. longis; sinibus inter lobos latis, basi rotundato-obtusis. Corolla (sicca) pallido-subpurpurea, supra ventricosa, extus moderate patenti-pilosa pilis apice saepe minutissime glandulo-capitatis, 2.5–3 cm. longa, arcuata, labro superiori quam inferiori paulo longiori, filamentis stamineis latere nunc convexo nunc concavo valde pilosis, stylorum ramis subaequalibus subulatis. Nuculae maturae non visae.

Stems tetragonal, ultimate branches densely spreading-tomentose. Leaves opposite, petiolate, the slender and spreading-tomentose petiole 1–2 cm. long; blade now narrowly ovate now oblong-lanceolate, at apex subobtuse or acute or even subacuminate, at base now rounded or truncate now barely subcordate, very weakly crenulate-serrate, on upper surface moderately or subsparsely on lower very densely appressed-hispid, commonly 7–12 cm. long and 3–5 cm. wide; hairs slender, curved, sharp, whitish. Floral whorls few (1 or 2 observed for each branch), 4- or 6-flowered. Pedicel densely spreading-pilose, about 8–12 mm. long. Calyx widely obconic-campanulate, pubescent, conspicuously or at least weakly veined, tube 7–10 mm. long; lobes triangulate-lanceolate or -oblong, at apex acute, commonly 4–8 mm. long; interlobar sinuses broad, at base rounded-obtuse. Corolla (in dry state) pale-purplish, supernally ventricose, on outer surface moderately spreading-pilose (the hairs often very minutely glandular-capitate at their apex), 2.5–3 cm. long, curved, upper lip a little longer than the lower, stamineal filaments strongly pilose now on the convex now on the concave side, stylar branches subequal and subulate. Mature nucules not seen.

Specimens examined: *Otto Degener*, straggling over shrubs up to 15 feet high, on summit spur of Kanehoa, Isl. Oahu, April 14, 1940 (Berl.; Field); *Degener & Emilio Ordoñez* 12,374, same locality, May 28, 1939 (type, Field: cotypes, Berl.; Deg.; Field; etc.).

In my monograph on *Stenogyne* Benth. (Bishop Mus. Bull. 136: 59–101. 1935), this species would stand in that portion of the key under the last letter *e* on page 60. More precise location of its position is impossible as yet because of the uncertainty existing at least for the present regarding the color of its corollas in the living state. The leaves average larger than for the other species of *Stenogyne* and, in fact, are suggestive of the related genus *Phyllostegia* Benth. and certain varieties of such species as *P. parviflora* (Gaud.) Benth. The large calyces, exceptional for *Stenogyne*, call to mind *Phyllostegia vestita* Benth. The scandent habit, the axillary whorls of flowers, and the subulate style-branches are, however, typical of *Stenogyne*.

The type-collection lacked corollas and apparently mature fruits. Mr. Degener revisited the type plants on February 11, 1940, but succeeded in finding only "one single shriveled corolla . . . . too poor to really bother with." On April 14, 1940, he visited the type locality still a third time and obtained the two sheets of cited material, bearing, in all, five well developed corollas. From this last material the description of the corollas has been drawn.

Bidens pentamera (Sherff) Deg. & Sherff *ex* Sherff, Amer. Journ. Bot. 28: 31. 1941; *Bidens Campylotheca* var. *pentamera* f. *filicifolia* Sherff, Bot. Gaz. 85: 4. 1928.

The forma *filicifolia* was originally separated on the basis of its more numerous leaflets (7–9 instead of 5). Recently Mr. Otto Degener has revisited the type locality with his associate collectors and obtained additional material (Degener, Ordoñez, & Salucop 12,399, in jungle at 7,000 feet, within Koolau Gap on west side, Haleakala, East Maui, August 20, 1939 [Field]). He reports that the forma *filicifolia* must be reduced to synonymy with *B. pentamera*.

Bidens mauiensis var. cuneatoides Sherff (Bot. Gaz. 86: 440. 1928) ×**Bidens Menziesii** (Gray) Sherff, *op. cit.* 70: 98. 1920.

Bidens mauiensis var. *cuneatoides* has been known heretofore only from its type locality on the Isthmus of Maui, while *B. Menziesii* was known from the islands of Molokai, Maui, and Hawaii. On August 25, 1939, Mr. Otto Degener discovered these two forms growing together on a small, arid, grassy ridge on the southeast side of Ukumehame Gulch, 1.75 miles from the southern coast of West Maui. Besides the typical form of *B. mauiensis* var. *cuneatoides* (Degener 12,405*a*) and of *B. Menziesii* (Degener 12,405*e*), there were collected perhaps two hundred additional specimens which were apparently hybrids (Degener 12,405*b*) or unmistakably such (Degener 12,405*c*, Degener 12,405*cc*, and Degener 12,405*d*) between the two. Recognizing the hybrids as new to science, Mr. Degener very kindly lent the entire suite of specimens for my study. Generally speaking, the hybrids display so many inconstancies in foliage and inflorescence that it would be difficult to draw a worth-while description of them. In a rough way, however, I have found it possible, by relying upon foliage characters and disregarding numerous intergradations of inflorescence, to divide them into groups or categories:[1] Degener 12,405*b*, leaves somewhat as in the tripartite-leaved form of *B. mauiensis* var. *cuneatoides*, but with divisions sometimes five, often narrower and more elongate, the terminal one commonly long-attenuate to acute or acuminate at apex (or again incisedly toothed); Degener 12,405*c*, leaves frequently bipinnatifid, segments usually narrowly linear; Degener 12,405*cc*, with somewhat similar leaves, but these a little more bipinnate and more delicately cut; Degener 12,405*d*, similar to no. 12,405*c*, but with leaves somewhat larger and divisions often broadly linear. A representative set of these variants has been deposited in the Herbarium of Field Museum and Mr. Degener plans to distribute the remaining duplicates in due time to numerous other institutions.

Bidens chiapensis Brandegee, Univ. Calif. Publ. Bot. 6: 76. 1914.

In my monograph of the genus *Bidens* (Field Mus. Bot. Ser. 16: 531. 1937), the geographic range for *B. chiapensis* was given as "State of Chiapas to State of Michoacán, southern Mexico." This range is now seen to be extended well into southwestern Guatemala by the following recently collected specimens: *Jorge Garcia Salas* 1,417, alt. 2,000 meters, Bosques de Cichavac, Dept. Chimaltenango (Field); *Paul C. Standley* 60,940, suberect herb, 1–2 feet tall, rays bright yellow, in brushy pine forest, alt. 2,400–2,700 meters, Cerro de Tecpám, region of Santa Elena, Dept. Chimaltenango, December

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[1] The letters *a*, *b*, *c*, etc. suffixed to Mr. Degener's collection-number were placed on the labels by myself.

26, 1938 (Field); *Standley* 65,892, erect herb, 2–3 feet tall, rays yellow, in *Cupressus* forest, alt. 3,000–3,450 meters, near Cumbre del Aire, Dept. Totonicapán, on road between Huehuetenango and Sija, February 20, 1939 (Field); *Julian A. Steyermark* 35,663, herb, rays and disk yellow, on shaded slopes of steep ravine, alt. 2,700–3,800 meters, along road, 8–18 miles northwest of San Marcos, Dept. San Marcos, February 15, 1940 (Field); *Steyermark* 35,744, on shaded slopes at base of cliffs, alt. 2,700–3,800 meters, along road, 8–18 miles northwest of San Marcos, Dept. San Marcos, February 15, 1940 (Field); *Steyermark* 36,001, flowers dull golden-yellow, in shade of other plants in swampy meadow, alt. 2,200–2,500 meters, along Quebrada Canjulá, between Sibinal and Canjulá, Volcán Tacaná, Dept. San Marcos, February 18, 1940 (Field).

In some of this material, the achenes are longer than formerly known and the outer ones tend somewhat to reflex finally in their upper portion. In the Salas specimen the longest achenes have the body measuring 1.5 cm. long.

Bidens Chrysanthemifolia (H.B.K.) Sherff, Bot. Gaz. 61: 501. 1916.

In my monographic treatment of the genus *Bidens* (Field Mus. Bot. Ser. 16: 353. 1937), this species was said to be "known only from Department of Amatitlan, Guatemala." This range is now seen to be extended by the following specimens from Guatemala: *Julian A. Steyermark* 33,071, rays white, disc yellow with purple anthers, stems sprawling, on moist shaded north-facing pine slopes, alt. 1,800 meters, in hills between Güisiltepeque and Potrero Carrillo, Dept. Jalapa, December 11, 1939 (Field); *Steyermark* 36,081, rays white, disc yellow, leaves dull-green, in open field, alt. 2,500–4,400 meters, between Sibinal and summit of Volcán Tacaná, Dept. San Marcos, February 19, 1940 (Field).

Bidens Chrysanthemifolia var. **parvulifolia** (Sherff) comb. nov.; *Bidens parvulifolia* Sherff, Bot. Gaz. 56: 490. 1913.

In the above cited monograph of the genus *Bidens*, I interpreted (p. 356) my previously described *Bidens parvulifolia* "as merely a form of *Bidens Chrysanthemifolia* having minute, mainly undivided leaves." Very recently there has been assembled at Field Museum an exceptionally choice representation of material from Guatemala, and from this material it is evident that *B. parvulifolia* is constant enough in its foliar characters to merit treatment as a variety of *B. Chrysanthemifolia*. Both *B. Chrysanthemifolia* and its var.

parvulifolia, as we may now designate it, are seen from the recent collections to be at times much larger, more robust plants than formerly known. They may reach a height or (in procumbent plants) a length of 9 or 10 dm., with leaf-blades up to ±5 cm. long and ±2.5 cm. wide. The var. *parvulifolia* will include forms with simple or at times tripartite principal leaves, while the species proper will include forms with leaves considerably more dissected. For var. *parvulifolia* the following specimens, all from Guatemala, may be cited: *Heyde & Lux* 6,162, Guatemala, 1894 (Field; U.S.); *Heyde & Lux* 6,163, Guatemala, 1894 (Herb. Univ. Chicago in Field, type); *Jorge Garcia Salas* 1,397, alt. 2,300 meters, Chichavac Tecpan, Dept. Chimaltenango (Field); *Paul C. Standley* 59,390, erect or procumbent, abundant, rays white, alt. 1,800–2,100 meters, slopes of Volcán de Agua, north of Santa María de Jesus, Dept. Sacatepéquez, December 10, 1938 (Field; *nom. incolarum*, Mozote); *Standley* 65,242, erect or decumbent, rays white, in damp forest, alt. 2,250–3,000 meters, on slopes of Volcán de Agua, above Santa María de Jesus, February 11, 1939 (Field); *Standley* 67,322*a*, alt. about 2,500 meters, between Fuentes Georginas and Zunil, Dept. Quezaltenango, March 4, 1939 (Field); *Standley* 67,820, decumbent, rays white, in sandy *Alnus* forest, alt. about 2,400 meters, Cumbre de Tuilacán, southwest of San Martín Chile Verde, Dept. Quezaltenango, March 8, 1939 (Field); *Standley* 67,846, erect herb, 3 feet tall, rays white, in sandy *Alnus* forest, alt. about 2,400 meters, same place and date (Field); *Julian A. Steyermark* 32,751, rays cream-yellow, on open slopes in pine woods, below summit, alt. 2,000–2,500 meters, between Miramundo and summit of Montaña Miramundo, between Jalapa and Mataquescuintla, 6 miles south of Miramundo, Dept. Jalapa, December 5, 1939 (Field); *Steyermark* 32,752, rays white, disc yellow, leaves light-green, in open pine woods below summit, same place and date (Field); *Steyermark* 34,474, rays white, disc yellow, leaves soft and thickish, alt. 2,500 meters, ravine below Fuentes Georginas, just above Zunil, Dept. Quezaltenango, January 20, 1940 (Field; a small plant, closely similar to type specimen); *Steyermark* 34,945, leaves membranaceous, grass-green above, paler beneath, rays white, disc yellow, alt. 3,000–3,300 meters, Volcán Santo Tomas, Dept. Quezaltenango, January 24, 1940 (Field); *Steyermark* 35,644, rays white, disc yellow, alt. 2,700–3,800 meters, along road "between San Sebastián at km. 21 and km. 8, 8–18 miles northwest of San Marcos," Dept. San Marcos, February 15, 1940 (Field).

Cosmos Steyermarkii sp. nov.

Herba annua, erecta, gracilis, 3–5 dm. alta, supra suberecte pauciterque ramosa; caule ±12-sulculato, irregulariter sparsimque patenti-setuloso vel raro -spinuloso, internodiis medianis 2–9 cm. longis; ramis in pedunculos elongatos (etiam usque ad ±18 cm. longos) inferne lineari-bracteatos gracillimos glabros monocephalicos desinentibus. Folia opposita, suberecta, graciliter petiolata petiolo submarginato plerumque glabro usque ad circ. 2 cm. longo; lamina pinnata vel bipinnatifida, 3–5 cm. longa, foliolis lateralibus 1 vel 2 jugis, segmentis lineari-filiformibus plerumque sub 1 cm. raro usque ad 2 cm. latis glabratis ultimis acriter apiculatis. Capitula radiata pansa ad anthesin 2–3.5 cm. lata et 8–11 mm. alta. Involucri bracteae exteriores circ. 7 vel 8, lineari-spathulatae vel prope apicem latius dilatatae, extus glabratae vel secundum nervum medianum atrum hispidulae, marginibus ciliatae, apice acri induratae, 3–4 vel demum etiam 5 mm. longae; interiores oblongae vel oblanceolato-oblongae, glabrae vel apice pubescentes, marginibus hyalinae alibi badiae, 4–8 (demum usque ad 10) mm. longae. Flores ligulati 5 vel 6, aurei, 1–1.8 cm. longi, ligula lineari-oblongi, apice 2- vel 3-denticulati vel aegre incisi. Flores tubulosi gracillimi, supra flavi, sub 5 mm. longi, non nisi dentibus anguste lanceolatis pubescentes. Achaenia paleas multo superantia, aristis inclusis usque ad 2.8 cm. longa; corpore subplano, atro, glabro vel ventraliter secundum nervum medianum plus minusve tuberculato-setuloso, marginibus basaliter stramineo-tuberculato (tuberculis antrorsum spinulosis) aliter anguste stramineo-alato (alis crassis induratis cartilagineis ut videtur e tuberculis coalitis ortis ergo ciliatim et similiter antrorsum spinulosis), usque ad circ. 1.6 cm. longo et alis inclusis ad 3 mm. lato; cervice plana, angusta, straminea vel purpurascenti, ciliatim antrorsumque tuberculato-setulosa, usque ad 1 cm. longa, apice biaristata; aristis gracilibus, rectis vel subarcuatis, moderate divergentibus, antrorsum hispidulis, 1.5–2.5 mm. longis.

Annual herb, erect, slender, 3–5 dm. tall, suberectly and sparingly branched above; stem ±12-sulculate, irregularly and sparsely spreading-setulose or rarely -spinulose, median internodes 2–9 cm. long; branches running into elongate peduncles, these linear-bracteate below, very delicate, glabrous, monocephalous, up to even ±18 cm. long. Leaves opposite, suberect, slenderly petiolate, the submarginate petiole commonly glabrous and up to about 2 cm. long; blade pinnate or bipinnatifid, 3–5 cm. long, lateral leaflets 1 or 2 pairs; their segments linear-filiform, commonly under 1 cm. rarely

up to 2 cm. wide, glabrate, the ultimate ones sharply apiculate. Capitula radiate, expanded at anthesis 2–3.5 cm. wide and 8–11 mm. tall. Exterior involucral bracts about 7 or 8, linear-spatulate or near apex more widely dilated, outwardly glabrate or along the dull-black median nerve hispidulous, marginally ciliate, apically sharp and indurated, 3–4 or finally even 5 mm. long; interior bracts oblong or oblanceolate-oblong, glabrous or apically pubescent, hyaline at edges but elsewhere chestnut-brown, 4–8 (finally up to 10) mm. long. Ligulate florets 5 or 6, golden-yellow, 1–1.8 cm. long, the ligule linear-oblong, at apex 2- or 3-denticulate or weakly incised. Tubular florets very slender, yellow above, under 5 mm. in length, not pubescent unless on the narrowly lanceolate teeth. Achenes much surpassing the pales, up to 2.8 cm. long including the aristae; body flattish, dull-black, glabrous or ventrally more or less tuberculate-setulose along the median nerve, at margins stramineous-tuberculate below (tubercles antrorsely spinulose) elsewhere narrowly stramineous-alate (wings thick, indurated, cartilaginous, seemingly formed from coalesced tubercles therefore ciliately and in a similar way antrorsely spinulose), up to about 1.6 cm. long and with wings included up to 3 mm. wide; neck flat, narrow, stramineous or becoming purple, ciliately and antrorsely tuberculate-setulose, up to 1 cm. long, at apex biaristate; aristae slender, straight or somewhat curved, moderately divergent, antrorsely hispidulous, 1.5–2.5 mm. long.

Specimens examined: *Julian A. Steyermark* 31,341, on dry, rocky slope of glade, alt. 1,200–1,500 meters, Montaña Castilla, vicinity of Montaña Cebollas, along Rio Lucía Saso, 3 miles southeast of Quezaltepeque, Dept. Chiquimula, Guatemala, November 6, 1939 (type, Field: cotype, Gray).

In the key published in my monographic revision of the genus *Cosmos* (Field Mus. Bot. Ser. 8: 402. 1932), this species would stand next to *C. Blakei*, from which it differs, among other respects, in having a much more delicate habit, leaves under 7 cm. not ±1 dm. long, segments linear-filiform rather than linear; heads 5- or 6- not about 10–12-rayed, their involucres externally glabrous or glabrate not definitely pubescent, the outer bracts shorter, narrower, and apically less dilated; peduncles very slender, elongate (up to ±1.8 dm. long) and glabrous, not robust, of comparatively moderate length (under 1.2 cm. long), and densely pubescent. With *C. exiguus* and *C. Blakei*, *C. Steyermarkii* belongs to the section *Klibea* (*op. cit.* 423).

Cosmos Crithmifolius H.B.K. Nov. Gen. et Sp. 4: 190 (242). 1820.

In my monographic revision of *Cosmos* above cited, the southern limits of distribution for *C. Crithmifolius* were given (p. 426) as Guatemala and Honduras. Only a single specimen (W. C. Shannon 608) was known to me at that time from Guatemala, and this was from Amatenango, in the extreme western part of the country, virtually at the Chiapas border. Similarly, only a single specimen (P. C. Standley 56,245) was known from Honduras, and this had come from the Department of Comayagua, some 300 miles to the east of Amatenango. Recently, additional specimens have come in from various localities reaching across almost the entire southern half of Guatemala. These are: *Paul C. Standley* 58,001, erect herb, 3–4 feet tall, rays deep rose, in pine forest, alt. 1,500–1,900 meters, along road from Chimaltenango to San Martín Jilotepeque, Dept. Chimaltenango, November 25, 1938 (Field); *Julian A. Steyermark* 30,655, rays pink-brick color, on oak-pine slopes, alt. 500–1,200 meters, along Río Taco, between Chiquimula and Montaña Barriol, 3–15 miles northwest of Chiquimula, Dept. Chiquimula, October 26, 1939 (Field); *Steyermark* 32,590, in dry oak woods two-thirds way up, alt. 1,300–1,700 meters, Cerro Alcoba, just east of Jalapa, Dept. Jalapa, December 2, 1939 (Field); *Steyermark* 32,741, rays rose-lilac, on open slopes in open pine woods below summit, alt. 2,000–2,500 meters, between Miramundo and summit of Montaña Miramundo, between Jalapa and Mataquescuintla, 6 miles south of Miramundo, Dept. Jalapa, December 5, 1939 (Field); *Steyermark* 32,999, rays rose-purple, in dry, rocky oak woods, three-fourths way up, alt. 1,400–1,900 meters, Montaña Durazno, 2 miles east of San Pedro Pinula, Dept. Jalapa, December 10, 1939 (Field; *nom. vernac.*, escobillo); *Steyermark* 33,081, rays rose-colored, on moist, shaded, pine-covered slopes in hills between Güisiltepeque and Potrero Carrillo, alt. 1,800 meters, Dept. Jalapa, December 11, 1939 (Field).

Cosmos exiguus A. Gray, Proc. Amer. Acad. 22: 429. 1887.

In the same above cited monographic revision of *Cosmos*, the geographic distribution of *Cosmos exiguus* A. Gray was given as "western Mexico from the State of Sinaloa southeastward to the State of Michoacan." From the following recently examined additional specimens, the range is seen to be extended northward into the State of Chihuahua in northern Mexico, eastward into the

State of Mexico and southeastward into southwest Guatemala: *Howard Scott Gentry* 2,017, flower lavender, rays with a purple stripe, in thin gravel soil on rocks on sun slope, pine ridge, Sierra Canelas, Río Mayo, Chihuahua, October 8, 1935 (Field); *Gentry* 2,825, flower purple, on oak sun slope, Upper Sonoran, La Cienegita, Río Mayo, Chihuahua, September 20, 1936 (Field); *George B. Hinton* 2,126, on grassy hill, alt. 2,030 meters, Carboneras, District of Temascaltepec, (State of) Mexico, October 24, 1933 (Field); *Hinton* 5,081, flower pink, alt. 1,960 meters, in pine woods on hill, Rincón, District of Temascaltepec, November 8, 1933 (Field); *Paul C. Standley* 82,338, scarce, heads purplish-pink, alt. about 1,780 meters, in pine-oak forest, Río Pucal, about 14 km.. south of Huehuetenango, Dept. Huehuetenango, southwestern Guatemala, January 4, 1941 (Field).

NEW SPECIES OF CROTON FROM GUATEMALA

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NEW SPECIES OF CROTON FROM GUATEMALA

LEON CROIZAT

The species of *Croton* here discussed or described as new were collected by Paul C. Standley during two Field Museum botanical expeditions to Guatemala in 1938-39 and 1940-41.

Croton botryocarpus, sp. nov. Frutex gracilis ca. 2-metralis. Innovationibus inflorescentiisque sordide hispidulo-argillaceis vel hispido-tomentosis demum glabratis. Foliis ovato-ellipticis vel ovato-lanceolatis, breviter acuminatis vel cuspidatis, basi rotundatis, margine pustuloso-asperatis pilisque simplicibus auctis, subtus trichomatibus late stellatis lanulosis, supra novellis aeque ac adultis glabris, in sicco brunneis, 6-3 cm. longis, 2.5-1.5 cm. latis, venis primariis pinnatim ca. 8-jugis adscendentibus; petiolo lanuloso-stellato, 1-0.5 cm. longo, glandulis 2 subcylindricis, stipulis minimis vel subnullis. Inflorescentiis simplicibus, vulgo foliis verticillatim dispositis fultis, basi conferte ♀, ad 5-6 cm. longis. Floribus ♂ ignotis. Floribus ♀: perianthio (sub fructu) ca. 3-3,5 mm. lato, lobis 5 discretis, glabratis integerrimis linearibus, ad 1.5-2 mm. longis, petalis videntur nullis; capsula ellipsoidea, apice gibbose 3-cocca, ca. 6 mm. longa, 5-5.5 mm. lata, indumento detergibili matura glabrata, stylis 3 persistentibus ad 2-2.5 mm. longis, quove fere ad basim partito, columella fructu delapso ca. 4.5 mm. longa, apice incrassata, semine ellipsoideo 4 mm. longo, 3-3.5 mm. lato, apice truncato, caruncula minima, testa brunnea obscure pinnatim costulata, arillo tenuissimo subnitido.—Guatemala, Dept. Jalapa, vicinity of Jalapa, alt. about 1,360 meters, "damp thicket, slender shrub 2 meters tall," *Paul C. Standley* 77519 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.); Dept. Huehuetenango, northwest of Malacatancito at km. 8 of the highway from Huehuetenango, alt. about 1,950 meters, "dry open rocky slope; shrub 2 meters tall," *Standley* 82206, Jan. 1941.

Standley 82206 is a poor specimen, as I have it, but probably belongs here. This new species suggests *C. decalobus* Muell. Arg., but can easily be separated from it on account of the entire perianth lobes of the ♀ flower. *Croton lasiopetaloides* Croiz., described in this same paper, has a different kind of foliage and a somewhat different ♀ flower. The congested capsules, the lanulose-stellate indumentum, the venation, and the peculiar margin of the blade are characteristic.

Croton callistanthus Croizat in Journ. Arnold Arb. 21: 84. 1940.—*Standley* 86784, collected along the old road between Finca Pirineos and Patzulín, alt. 1,200–1,400 meters, Dept. Quezaltenango, Guatemala, belongs to this species, and is in fruit. *Woodson, Allen & Seibert* 1006, collected at Bajo Mona, Prov. Chiriquí, Panama, also is in fruit, and despite the original erroneous determination, *C. gossypiifolius*, certainly belongs to *C. panamensis* Muell.-Arg.

The fruiting parts of these two plants differ as follows:

Croton callistanthus. Capsule small, the dehisced cocci delicate, not over 4.5 mm. long on the average, the yellowish epicarp finely granular and scarcely tomentose; columella at dehiscence about 3 mm. long; seed scaraboid, about 3 mm. long and broad (at the small caruncle), the testa irregularly granular-rugose.

Croton panamensis. Capsule fairly large for a species of this group, the dehisced cocci up to 6.5 mm. long, the epicarp manifestly verruculose and brown-orangish-tomentose; columella about 5.5 mm. long; seed (not as yet perfectly ripe but apparently measuring full size) scaraboid, about 5 mm. long and 3.5 mm. broad, the testa gross-costulate.

Croton callistanthus and *C. panamensis* are so similar in the characters of their vegetative parts and ♂ flowers that they can not be certainly identified as distinct unless ripe capsules and seeds are available. It is characteristic of *Croton*, especially in regions that have enjoyed the same climate from ages past, that large groups of species retain the same foliage and the same ♂ flowers, while speciating in the ♀ perianth and in the capsule, a fact emphasized elsewhere in this paper under *C. guatemalensis.* Thus, it proves practically impossible to dispose of critical forms unless very good collections are forthcoming, the risk attending the publication of new species on anything less than perfect material being very great. It is not possible as yet to decide whether *C. Steyermarkianus* Croiz. is nearer to *C. callistanthus* than to *C. panamensis.* On the other hand, *C. triumfettoides* Croiz. might be represented by *Austin Smith* A407, collected in the region of Zarcero, Costa Rica, a specimen on which appear the hispid pubescence and the slender stipitate glands of the type.

A substerile specimen, *Standley* 88211, Dept. Retalhuleu, region of Ajaxá, east of Santa Cruz Muluá, Guatemala, belongs apparently to *C. callistanthus.*

Croton guatemalensis Lotsy in Bot. Gaz. 20: 353, *pl. 25, 1–6.* 1895.—*Croton* is a genus which speciates by modification of the ♀ flower and fruit rather than in other manners. In Malaysia not less than in Central America the species of the same affinity are apt to retain the same foliage, and can not be recognized as distinct unless the fruit is seen. It is often found that plants that appear to be identical at first differ very materially in the size and indument of their capsule.

In Malaysia and Australasia a great many different forms center around *C. argyratus* Bl. and *C. Verreauxii* Baill., up to six or seven manifestly different forms having been identified for years under Blume's or Baillon's binomial. In the same manner, several are the forms in the vicinity of *C. niveus* Jacq. which range from Venezuela to Mexico and are confused today as one species. Jacquin's binomial, as now used, is practically meaningless.

Lotsy's descriptions of *C. guatemalensis* and *C. eluterioides* are such that only one species seems to be involved. The locality of collection is approximately the same if not the same (Dept. Santa Rosa, Guatemala), and little in the diagnoses seems to justify the belief that the species are two rather than one. Notwithstanding this, it is quite probable that *C. eluterioides* and *C. guatemalensis* are distinct. Lotsy states that the capsule of *C. guatemalensis* is unknown, and that the largest fruiting specimen of *C. eluterioides* which he saw had a capsule about 21 mm. long and 15 mm. wide. *Heyde & Lux* 3035, isotype of *C. guatemalensis,* and *Heyde & Lux* 3470, isotype of *C. eluterioides,* are available here. I find no ♀ flowers on the former, but nearly ripe capsules about 13 mm. long and about 10 mm. wide on the latter. The vegetative parts are practically identical in the two specimens cited.

A very important character which Lotsy does not mention is the armature of the capsule of *C. eluterioides.* The epicarp in this fruit is coarsely granular if not bluntly muricate, very rough to the touch and easily seen without a lens. So far, I have seen no other specimen that I can match with *Heyde & Lux* 3470, this indicating that *C. eluterioides* is apparently local or rare. I have found, on the contrary, numerous specimens which well agree with Lotsy's illustration of *C. guatemalensis* and have a much smaller capsule than the isotype of *C. eluterioides.* This capsule is roughened somewhat, but its processes are smaller and more loosely arranged than on the fruit of *C. eluterioides;* the size is also smaller, the ripe capsule measuring on the specimens in question about 9 mm. in length and about 8 mm. in thickness, the seed being 7 mm. long and 5 mm. broad.

Thus, two different species seem to exist in the flora of the Department of Santa Rosa, one with a coarse and large capsule, the other with a sparingly granular and smaller fruit. The former is *C. eluterioides*, the latter I accept here as *C. guatemalensis*. These two species can not be told apart unless in fruit. Neither one is *C. niveus* Jacq., despite their having been so identified in several cases. The classic locality of *C. niveus* is "Carthagenae in sylvaticis" (Colombia), and I believe that this species is well represented by such specimens as *H. H. Smith* 356, Colombia, Santa Marta; and *Brother Elias* 327, Colombia, Barranquilla and vicinity. *Croton niveus* would seem to be an altogether smaller plant than *C. guatemalensis*, with lesser ♂ flowers, and is probably not found north of the eastern coast of Nicaragua. I have never seen a specimen of it in fruit, which is puzzling.

I determine as *C. guatemalensis* the following specimens, all from Guatemala, subject to a later revision with material in full fruit and larger collections: *Bequaert* 25, near Pacayal, in 1931; *Skutch* 894, Dept. Quezaltenango, in 1934; *Standley* 58086, Dept. Sacatepéquez, in 1938; *Standley* 59582, Dept. Guatemala, in 1938; *Standley* 62318, Dept. Chimaltenango, in 1939; *Standley* 86715, Dept. Quezaltenango, in 1941; *Standley* 88108, Dept. Retalhuleu, in 1941; *Standley* 88174, Dept. Retalhuleu, in 1941; *Standley* 88918, Dept. Sacatepéquez, in 1941; *Standley* 89546, Dept. Escuintla, in 1941. Since ripe or nearly ripe capsules are available on *Bequaert* 25, *Skutch* 894, *Standley* 62318, 86715, 88918, and 89546, my concept of *C. guatemalensis* rests in the main upon these collections.

This manuscript was in type when I received three specimens which very closely match *Heyde & Lux* 3470, the isotype of *C. eluterioides* Lotsy available here, namely: *Dodge & Goerger s.n.*, Costa Rica: Prov. Cartago, slope of Cerro Carpintera above La Unión de Tres Ríos, 1,350–1,500 meters, July 1936; *P. H. Allen* 661, Costa Rica: Vicinity of El Alto Station on road to Cartago, 1,550 meters, "tree 20 m., flowers white," December 1937–January 1938; *Davidson* 865, Panama: Prov. Chiriquí, Boquete, 1,200 meters, "large tree," July 1938. The Davidson collection bears a fruit which has dehisced cocci about 19 mm. long with a much roughened epicarp, and ellipsoid seeds, pointed at the chalazal end, strongly keeled on the back, very shallowly costulate, about 19 mm. long and 9 mm. broad. The caruncle is remarkably small and the aril brownish, with darker mottlings nearly parallel with the conspicuous raphe. On *Allen* 661 is found a ♀ flower perfectly comparable with flowers of the same sex on *Standley* 86715. The styles of the Allen plant are manifestly longer and much more intricate (up to 5 mm. long) than those of the Standley collection (not over 2.5 mm. long); the pedicel is also shorter (1 cm. long) and somewhat stouter in the former than in the latter (ca. 2 cm. long). Barring these differences, the two flowers can not be told apart with certainty.

On the strength of the cited material I now believe that *C. eluterioides* is a more southern plant than *C. guatemalensis*, ranging mostly in Panama and Costa Rica and reaching in Guatemala its northern distributional limits. All the specimens listed have been distributed as *C. niveus* Jacq.

Croton jalapensis, sp. nov.—Frutex vel arbuscula ad 6 m. alta. Innovationibus inflorescentiisque pube stellato-hispidula citrina indutis, citius glabratis. Foliis pro more ovatis haud longe acuminatis, margine grosse dentato-serratis caeterum ambitu figuraque ludentibus, interdum elliptico-lanceolatis vel ovato-lanceolatis subcuspidatis, basi rotundatis vel rotundato-truncatis, 10–3 cm. longis, 6–2.5 cm. latis, firme chartaceis *Celtidis* spp. texturam in mentem vocantibus, novellis subtus griseo-tomentellis venis pallide lutescentibus, supra laxius tomentosis; adultis subtus valde glabratis, supra indumento longe radiato sparsissimo papillisque scabridis, in sicco olivaceis; venis primariis ad 5-jugis, primo jugo tertium laminae superum attingente valde ramoso, margine inter dentes glandulis stipitatis sub lente obviis ornato; petiolo luteo-tomentello 2–2.5 cm. longo, apice glandulis 2 anticis vel subanticis stipitatis ornato. Floribus ♂ ignotis. Floribus ♀ suppeditantibus valde mancis: pedicello brevissimo, 1.5 mm. longo vel breviore, eadem ratione ac ovario induto; ovario globuloso tricocco, ca. 2 mm. magno, indumento citrino conferto toto occultato, columella fructu delapso ca. 5 mm. longa, coccis maturis vix tomentellis ca. 9 mm. longis, duris; semine scaraboideo haud applanato, 5.5 mm. longo, ca. 5 mm. lato, apice more proprio producto-carinato, caruncula estipitata 1 mm. longa, 1.5 mm. lata, testa grosse at haud profunde rugoso-costata, arillo subnitido tenui, brunneo-maculato.—Guatemala, Dept. Jalapa, vicinity of Jalapa, alt. about 1,360 meters, "damp thicket; shrub 2–3 meters tall," *Paul C. Standley* 76414, Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.); same locality and altitude, "damp thicket. Shrub or small tree to 6 meters, scarce," *Standley* 77378, Nov. 1940.

Strongly suggesting *C. quercetorum* Croiz., but differing from it in the seed, the capsule, the glands, the margin of the leaf, and the indument, the last especially on young leaves. Its affinities suggest both *C. corylifolius* Lam., of the West Indies, and *C. malvaviscifolius* Millsp., of Yucatan.

Croton jutiapensis, sp. nov.—Frutex 2-metralis. Innovationibus inflorescentiisque pube hispida pallide ochracea tomentosis, citius glabratis. Foliis ovato-lanceolatis vel lanceolatis, apice breviter cuspidatis, basi rotundato-cuneatis, 6–3 cm. longis, 3.5–1.5 cm. latis, supra brunneo-olivaceis, subtus brunneo-griseis, primum utrinque tomentosis, adultis supra quam subtus laxius indutis, margine manifeste duplicato-serratis vel dentato-serratis (dentibus ad 3 per 1 cm. marginis longitudine), inter crenas sub lente stipitato-glandulosis, venis primariis utrinque ca. 6-jugis, adscendentibus, bene anastomosatis, penninerviis; petiolo laete ochraceo-tomentoso, 0.5–1.5 cm. longo, glandulis stipitatis 2 lateralibus, stipulis setaceis integris ad 0.5 mm. longis. Flore ♀ unico viso: perianthii lobis anisomeris, more *Julocrotonis* spp., primo intuito insigni, ad 12 mm. longo, totidem lato, lobis ovarium valde excedentibus 5, majoribus spathulatis, ad 8 mm. longis, 2.5 mm. latis, integris, minoribus linearibus ad 5–6 mm. longis, vix 0.3 mm. latis, integris, perianthio ipso profunde partito, petalis (videtur) subnullis, glandulis obscuris; ovario albocitrino, hispido-tomentoso, ad 4 mm. lato, 3 mm. longo, stylis 3 filiformibus, hispidulis, quove fere ad basem in lacinias 2 ca. 4 mm. longas partito.—Guatemala, Dept. Jutiapa, vicinity of Jutiapa, alt. about 850 meters, "brushy rocky slope. Shrub 2 meters, common," *Standley* 74971, Oct.–Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

Suggests a tomentose form of *C. Guildingii* Griseb. of Grenada in the West Indies, but is immediately characterized as distinct by the anisomerous lobes of its ♀ perianth. Resembles in habit and foliage *C. macrodontus* Muell. Arg., of Veracruz in Mexico, but has an altogether different ♀ flower.

Croton lasiopetaloides, sp. nov.—Frutex ad 1.5 m. altus. Innovationibus inflorescentiisque pube stellata brunnea vel cinerea indutis. Foliis ovatis vel ovato-lanceolatis breviter acuminatis, basi rotundatis vel levissime cordatis, primo utrinque tomentosis serius supra glabratis vel glabris, subtus semper cinereo-tomentellis, in sicco e lutescentibus (foliis emorientibus) olivaceo-brunneis, ad marginem quam ad laminam confertius pustulosis, subintegris, 7–5 cm. longis, 5.5–3.5 cm. latis, nervis primariis ad 5 late patentibus, supra impressis cum trabeis, primo jugo laminae dimidium attingente; petiolo ca. 2 cm. longo, glandulis 2 anticis parvis, stipulis glandulosis valde obscuris. Inflorescentiis subspicatis brevibus. Floribus ♂ ignotis. Floribus ♀ subsessilibus vel sessilibus, perianthio ca. 5 mm. lato, lobis 5 discretis lineari-acuminatis ca. 2 mm. longis, 0.75 mm. latis, basi quove glandula sessili sat magna obsito, integerrimis, dorso parcius tomentosis, ovario hispido-albicante haud tomentello ad 2.5 mm. longo, 3.5 mm. lato; stylis 3 ad 3.5 mm. longis, quove fere ad basem partito, columella fructu delapso ca. 6 mm. longa, apice manifeste triloba incrassata.—Guatemala, Dept. Huehuetenango, mountains west of Aguacatán on the road to Huehuetenango, alt. about 1,950 meters, "in oak forest, shrub 1.5 meters tall," *Paul C. Standley* 81219, Dec. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

In certain details of its flowers and, so far as seen, in the conspicuous leaf buds, *C. lasiopetaloides* suggests *C. botryocarpus* Croiz., but actually differs from it in the following characters: (1) The ovary is definitely hispid, not tomentellous or glabrate; (2) the perianth lobes are somewhat narrower, acuminate, and slightly tomentose, neither ligulate nor glabrous; (3) the foliage is not pinnatinerved and has a lesser number of primaries, the over-development in length of the first pair causing the venation to appear as if 3-nerved; (4) the leaves at unfolding are tomentose on both faces and remain so a while; in *C. botryocarpus* the leaves, even at unfolding, are scarcely hairy above and become there almost immediately glabrous; (5) the columella after dehiscence is stouter and somewhat longer.

The specific name is derived from *Lasiopetalum* Sm., a genus of the Sterculiaceae, and in particular from *Lasiopetalum Schulzenii* Benth., an Australian species which *C. lasiopetaloides* appears to suggest in habit and in foliage. It is worth noticing here that the Sterculiaceae Lasiopetaleae are closely related with *Croton,* the evidence to be derived from floral morphology and general somatic characters indicating that both *Croton* and *Lasiopetalum* arose contemporaneously from a common malvoid ancestor in the same vicinity.

Croton limnocharis, sp. nov.—Frutex 2–4-metralis. Innovationibus inflorescentiisque pube stellata albida tomentellis, demum glabratis. Foliis optime ovato-cuspidatis vel ovato-lanceolatis, basi plus minusve obvie cordatis, 12–6 cm. longis, 7.5–3 cm. latis, in sicco supra olivaceis subtus pube tenui stellato-flocculosa detergibili griseo-tomentellis, tenuiter chartaceis, margine vix repandulis vel subintegris, venis primariis utrinque ca. 6-jugis, primo jugo laminae tertium inferum vel (frequentius) dimidium attingente, ramoso; petiolo sat gracili, tomentello, ca. 2.5 cm. longo, glandulis caute inquirendis 2 patelliformibus sessilibus posticis, stipulis nullis vel subnullis. Floribus ♂ ignotis. Floribus ♀: perianthio delicato vix 3 mm. lato, pedicello ca. 2 mm. longo, lobis triangularibus vix 1–1.5 mm. longis, ovario ellipsoideo toto albicante tomentello ad 2 mm. longo, 1.5 mm. lato; stylis 3, ad 2–2.5 mm. longis, quove fere ad basem partito; capsula matura globulosa, ca. 7 mm. longa lataque, leviter trigona, pedicello fulta ca. 2 mm. longo, indumento facillime detergibili; semine scaraboideo applanato, ad chalazam rotundato-acutato, ad carunculam subtruncato-apiculato, 4.5 mm. longo, fere totidem lato, caruncula valde depressa ad 2 mm. lata, testa sublevi, arillo tenui subnitido lutescente.—Guatemala, Dept. Jutiapa, vicinity of Jutiapa, alt. about 850 meters, "damp thicket, shrub 2–4 meters," *Paul C. Standley* 75215, Oct.–Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

This new species is closely allied with *C. pungens* Jacq. and *C. sarcopetalus* Muell. Arg., that is to say, with a group having pantropic American range. It may be easily confused at sight with *C. pseudoxalapensis* Croiz., from Honduras, which it resembles in habit, but it plainly differs from this species on account of the venation, which definitely tends to be 3-nerved, not pinnate. The ♀ flower and fruit, moreover, are pediceled and not sessile, and the seed is smoothish, not manifestly costate-rugose.

The extensive material of *C. xalapensis* H.B.K. and *C. pseudoxalapensis* Croiz. that I have seen in the past three years makes me doubt that it will be possible to maintain these two binomials as distinct in a final revision of the group. *Croton xalapensis* was originally reported from the vicinity of Veracruz in Mexico, and *C. pseudoxalapensis* is endemic to western Honduras. So far, my experience has been that the species of Euphorbiaceae with a wide range occur preferably on the eastern coast of Central America and Mexico, the western coast, on the contrary, being exceedingly rich in localized endemics. Under the circumstances, it may easily prove possible that the same species occurs in Honduras and in the state of Veracruz, Mexico.

Croton quercetorum, sp. nov.—Frutex vel arbuscula ad 8 m. alta. Innovationibus inflorescentiisque argillaceo-tomentosis sordidis vel brunnescentibus, indumento serius deciduo. Foliis ovato-ellipticis vel triangulari-ovatis vel lanceolatis, acuminatis vel cuspidatis, basi rotundatis vel cuneatis, 14–7 cm. longis, 9.5–3.5 cm. latis, firme chartaceis, in sicco brunneo-olivaceis discoloribus, novellis utrinque tomentosis, citius glabrescentibus, adultis supra glabris, subtus trichomatibus stellatis longe radiatis parcissime indutis, margine irregulariter dentato-serratis, dentibus sub lente glandulosis, venis primariis utrinque ca. 5-jugis, primo jugo laminae ipsius dimidium attingente obscure ramoso; petiolo graciliore 2.5–4.5 cm. longo, tomentello, apice glandulis ca. 4 patelliformibus vulgo adaxialiter ornato, stipulis lentis, simplicibus vel 2–3-ramosis, gracilibus, ad 1.5 cm. longis, sat persistentibus. Inflorescentiis terminalibus simplicibus, habitu spicatis ad 20 cm. longis. Floribus ♂ ignotis. Floribus ♀ (sub fructu tantum notis): perianthio ad 7 mm. lato, pedicello vix 2 mm. longo, lobis integris, triangularibus, ca. 4 mm. longis, 2 mm. latis, dorso indumento rufescente grosso indutis; coccis delapsis ad 12 mm. longis, subligneis, glabratis; semine 10 mm. longo, 6.5 mm. lato, scaraboideo, caruncula vix 1.25 mm. magna, applanata, testa utrinque pinnatim costato-rugosa, arillo subnitido tenui lutescente.—Guatemala, Dept. Jalapa, mountains about Chahuite, northwest of Jalapa, alt. 1,650 meters, "damp oak forest; shrub or tree to 8 meters; abundant," *Paul C. Standley* 77460, Nov. 1940 (type in Herb. Arnold Arb.; duplicate in Herb. Field Mus.).

A species in the general affinity of *C. corylifolius* Lam., of the West Indies, strongly characterized by its stipules, indument, and capsule. It resembles certain states of *C. jalapensis* Croiz., but can easily be distinguished from it on account of its larger capsule and the seed, which is grossly rugose-costate on both its faces.

NEW PALMS OF BAHIA

BY

GREGORIO BONDAR

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NEW PALMS OF BAHIA*

BY GREGORIO BONDAR

Cocos vagans Bondar, sp. nov. Boletim 4, Inst. Centr. Fom. Econ. Bahia (1939) pp. 10–12, figs. 5–7, 12 (without latin diagnosis).

Caudex horizontale inclinatus, subterraneus, cum basibus persistentibus foliarum squamosus, asperus, sub terram ramificans. Foliae subconcinnae, strictae, 3 m. longae, 20–30 in gregibus aggregatae. Foliolae lineares, angulos acutos cum rachite formantes. Spatha erecta, plus minusve 1 m. longa, fusiformis, compressa, acuminata, pedunculo elliptico, gracili, rachite 30–40 cm. longa, ramis exsertis 30–40 cm. longis. Flores femininae globosi-pyramidales, sepalis coriaceis breviapiculatis, petalis minoribus membranaceis, ovaria conica, stigmatibus confluentibus. Flores masculinae brevipedunculatae, calyce minuto, sepalis triangularibus et carinatis, petalis lanceolatis apice obtusis, antheris ad extremitates bifidis in filamentum breve medio insertis. Drupa elongata, 3.5×1.8 cm., acuminata, bracteis sepalisque petalisque persistentibus, androecio 6-dentato, abortivo, exocarpio in maturitate luteoviridi, putamine ad extremitates conico, endocarpio osseo, papyraceo, fragili, interiore cum 3 vittis fuscis nitidis delineato. Semen leve, album.

This apparently acaulous palm of the caatingas of the interior of Bahia, at 300–400 m. above sea level, is abundant in the municipios

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* Since the palms constitute such an important element of the flora of Brazil, it should be a matter of satisfaction to Brazilians that once more, for the first time since the days of Barbosa Rodrigues, these palms are being studied in the field, as they should be, and are being described not in the Old World but in Brazil. Many numbers of the recent publications of Instituto Central de Fõmento Econômico da Bahia, 1939 to 1941, are thus devoted to palms. All of them are from the pen of Dr. Gregorio Bondar, long a resident of Bahia and known not only for his work on cacao in Brazil but also for his many entomological contributions. Several Bondar publications on palms are reviewed in Tropical Woods, No. 69 (1942): Boletim No. 2 (1938), O Licuriseiro (*Cocos coronata* Mart.) e suas possibilidades na economia brasileira; Boletim No. 4 (1939), Palmeiras na Bahia do Genero Cocos; Boletim No. 5 (1939), Importancia economica das palmeiras nativas do genero Cocos nas zonas seccas do interior bahiano; Boletim No. 6 (1939), Palmeiras da Bahia; Boletim No. 9 (1941), Palmeiras do Genero Cocos e descrição de duas especies novas. All of these, as well as a later paper, probably still unpublished, on the Attalea palms of Bahia, testify to the keen observation and critical sense of their author, his grasp of his subject, and intimate acquaintance with the plants of which he writes.

As may be inferred from some of the above titles, Dr. Bondar does not accept Beccari's generally unchallenged treatment of the genus Cocos, with its many of S. Ignez, Maracás, S. Teresinha, etc., covering great stretches, generally in association with *C. coronata* Mart., or forming isolated patches. Vernacular name "ariri," but also called "licurioba."

Leaves are subconcinnate; drupes at maturity greenish yellow; endocarp smooth, thin and readily broken; seeds 2.4 cm. long, 1 cm. in diameter, white, oily, covered by a white pellicle, externally reddish, of bitter taste.

The species approaches most closely to *Cocos petrea* Mart. from which it differs principally in its branched spadices, whitish tomentum of leaves and fruit, and smaller staminate flowers. Coll. G. Bondar (isotype Field Museum 619777).

Cocos Tostana Bondar, sp. nov. Op. cit. pp. 13–15, figs. 8, 9, 12, (without latin diagnosis).

Caudex erectus, mediocris. Foliae rigidae, erectae, non curvatae, 2.5–3 m. longae, petiolis quam foliis ⅓ longioribus, spinas marginales ad basem petiolae longas superiore curtas atque inclinatas ferentibus, parte suprema glabra. Foliolae lineares, acuminatae, ad basem foliae subaggregatae in duo planibus ad 15° divaricatae, superne in una plana equidistantes. Spadix 1.3–1.4 m. longa, rachite ramosa 50–60 cm. longa, ramis numerosis, angularibus, nodosis. Flores femininae conicae, sessiles. Flores masculinae in scrobiculis, pedicellis 1 mm. longis, antheris linearibus basim sagittatis, ad tertium basalem in filimentum insertis. Drupa ante maturitatem obovoidea 4 cm. × 2.6 cm., aurantiaco-rubra in maturitate, globosa, succulenta, pulpa fibrosa, putamine elongato externe fibroso ad extremitates acuto, endocarpio crasso, ad extremitates crassiore, interne levi, 3-vittato. Semen solidum, albumine uniformi.

segregations, considered by him artificial and founded only on the study of the kind of fragmentary material by which the palms are represented in almost all herbaria. A new revision of Cocos at his hands would be quite in order; but for the present at least, Dr. Bondar prefers to confine his publications to species of which he has gained a thorough knowledge by adequate personal observations in the field. In this connection it is of interest to remark that some of the species he describes were studied by him, sometimes primarily and originally, as host plants of particulate insect inhabitants. It is, however, to be expected that his ideas on the subject of Cocos may be developed and set forth by him eventually as opportunities for further field observations are afforded. In the meantime new species of Cocos described by him will doubtless by transferred promptly by other authors to Syagrus or other customary segregate genera.

Type material of Dr. Bondar's new species has been deposited in the herbarium of Field Museum. It therefore seems appropriate that the latin diagnoses of new species required by the international rules since Jan. 1, 1935, but not included with his detailed descriptions in portuguese, be published without further delay. In view of the fact that Dr. Bondar's name now appears on the list of the scientific staff of Field Museum as Research Associate, it is a pleasure to be able to record these new species in the Museum's Botanical Series.—B. E. DAHLGREN

This palm is rare in Bahia. It is characterized by its stem of medium size, 2–3 meters high and 10 to 15 cm. in diameter, bearing stiff erect leaves; by its persistent petioles not in distinct spirals; by the orange-red color of its fruit when ripe; and by its thick endocarp and nonruminate albumen. Vernacular name "licurioba-ussú."

Its habitat is near the littoral, not far from the city of Bahia with *C. coronata* Mart. and *C. schizophylla* Mart. It is apparently intermediate between these. It differs from *C. coronata* in its green, not grayish, leaves with segments but little divaricate at base, the apical ones in one plane, and the cavity of the endocarp marked by three bands (in *C. coronata* there is usually one). It differs from *S. schizophylla* in its larger size, its erect leaves with broader and clasping bases of the petioles, and its oblique spines diminishing upward, finally disappearing and leaving a smooth-edged interval below the rachis. Its spadix is more robust, its staminate flowers larger. The filaments attached at the basal third (in *C. schizophylla* at the middle), the albumen smooth (in *C. schizophylla* ruminate). Coll. G. Bondar (isotype Field Museum 619775).

Cocos Matafome Bondar, sp. nov. Op. cit. pp. 16 18, figs. 10–12 (without latin diagnosis).

Caudex erectus, *C. coronata* Mart. simulans. Foliae erectae, ad 3 mm. longae, petiolis persistentibus quam foliis ½ longioribus, non in cristis distinctis disposites. Foliolae in gregibus de 2–5 aggregatae, luteo-virides, fragiles. Spadix ad 2 m. longa, pedunculo ad 1.2 m. longo, rachite sulcata, ramis numerosis plus minusve 60, ad 50 cm. longis. Flores femininae sepalis obtusis imbricatis involventes, petalis minoribus acuminatis. Flores masculinae petalis lanceolatis obtuse acuminatis involventes, antheris ad tertiam basalem insertis. Drupa elongata, in maturitate luteo-viridi, putamine elongato, acuminato, fibroso, interne 3-vittato. Semen leve, cavum, ante maturitatem amarum.

The vernacular name is "matafome", referring to the edible qualities of its kernels. This palm was found in the interior of Bahia in the Municipio of S. Teresinha near Lagedo Alto, growing singly or in groups in association with *C. vagans* Bondar and *C. coronata* Mart. It appears to be intermediate between these. It has the trunk characters of the latter, but not its spiral arrangement of leaves. It resembles *C. vagans* in leaves, inflorescences, drupes, and kernels, but also differs in respect to all these characters. It cannot be considered a variety of *C. coronata*, because it is closer to *C. vagans* from which it differs essentially in its erect trunk, also in its fibrous putamen. Its leaves are green, not grayish as in *C. coronata;* its leaf-segments are less stiff and more fragile. The endocarp differs from that of *C. coronata* in having the cavity marked with three bands, instead of one as in the latter. Coll. G. Bondar (isotype Field Museum 619770).

Cocos Campos-Portoana Bondar, sp. nov. Bol. 6, Inst. Centr. Fom. Econ. Bahia (1939) pp. 7–9, figs. 2, 3, 6 (without latin diagnosis).

Caudex erectus, robustus, annulatus. Foliae erecto-incurvae, robustae, crispae, petiolis persistentibus in spira pentasticha dispositis. Foliolae lineares, asymmetrico-acuminatae, forte divaricatae, 5–6 in gregibus. Spadices grandes, 2–2.4 m. longae, rachite longi- et multi-ramosa, ramis exsertae, usque ad 80 cm. longis. Flores femininae sepalis involventes, petalis minoribus subtridentatis, androecio abortivo, annulato, marginibus levibus. Florum masculinarum calyces minusculae gamosepalae, petalis lanceolatis obtuso-acuminatis, antheris non bifurcatis. Drupa subglobosa, 3.2×3 cm. lata, in maturitate luteo-pallido-viridis, pulpa fibrosa, gummosa, esculenta, endocarpio elongato, osseo, crasso, intus monovittato, levi. Semen leve, 11 mm. × 10 mm. latum, apice conica.

This palm was found at fazenda Gangugy on the upper Rio Gungugy, municipio de Poçóes, at an elevation of 300–400 meters, in the state of Bahia. Local name, "licuri-assú."

It differs from *C. Romanzoffiana* Cham. in its persistent petioles in five rows, its larger fruit, and its thicker endocarp with smooth cavity; from *C. coronata* Mart. in its much more imposing size, its much larger spadices, its large male flowers, and its thick endocarp. Coll. G. Bondar (isotype Field Museum 619765).

Attalea Burretiana Bondar, sp. nov.—Caudex plus que 10 m. altus levis, foliis erectis circa 10 m. longis patentibus, ad apicem recurvatis et in angulo 90° tortis, foliolis suboppositis aequidistantibus in una plana directis, non pendentibus. Flores masculinae in scrobiculo parvo binae, petalis 16–18 mm. longis lanceolatis acuminatis, marginibus levibus vel vix irregulari-denticulatis, staminibus 6–7, 8–9 m. longis. Spadix androgynus ad 2 m. longus, pedunculo et rachite glabra, ramis numerosis, floribus 1–4, bracteis 4 (2 parvis et abortivis, 2 grandis), sepalis et petalis subaequalibus marginibus levibus, disco androecio circulari margini levi vix sinuoso haud dentato. Drupa ovoidea ochraceo-ferruginea 8–10 cm. longa diametro 5.5–6 cm. ad apice acuminata, exocarpio fibroso tenui (ad 1.5 mm. crasso), mesocarpio pulposo 3–4 mm. crasso, endocarpio 8–10 mm. crasso externe fibroso interne ad 5–6 mm. osseo, putamine rostrato basin triangulari, seminibus 1–3.

Differs from *A. compta* Mart.[1] in number of stamens, from *A. oleifera* Barb. Rodr. in number of seeds, non-tomentose rachis, and non-dentate petals of female flowers, and from *A. funifera* Mart. in flowers, drupes, and regularly spaced leaf-segments.

Named in honor of Professor M. Burret, Berlin-Dahlem, who called my attention to this palm.

Bahia, municipios adjacent to the capital, altitudes of 10 to 100 meters, in association with *A. Piassabossu* Bondar. A majestic ornamental palm, fruiting only after developing a trunk. Local name "palmeira". Municipio da Bahia, Aratú, coll. G. Bondar (isotype Field Museum 619754).

Attalea concentrista Bondar, sp. nov.—Caudex altus, foliis grandis erectis patentibus, foliolis suboppositis equidistantibus in una plana dispositis, petiolo et rachite dorsale dealbata. Spadicis masculini pedunculus et rachis cinereo-tomentosa, ramis albis tomentosis, floribus solitariis in scrobiculis, petalis 20–21 mm. longis, staminibus 6, quam petalis ⅔ (semper plus que ½) longioribus. Spadicis androgyni pedunculus et rachis luteo-albidus levis, florium foemininarum marginibus bractearum et sepalorum et petalorum levibus haud dentatis, cupula androecii circulari marginibus edentatis, ⅔ ovariam includenta. Drupa oblonga umbonata ochraceo-ferruginea scabra 9 cm. longa, diametro 5.5–6 cm., perianthio ⅓ drupae altitudine alto, seminibus 1–3.

Approaches *A. compta* Mart., differing in number of stamens. Differs from *A. oleifera* Barb. Rodr. in that the petals of female flowers are not dentate, the androecial disk is circular, the petals of the male flowers are larger; from *A. Burretiana* Bondar in that the male flowers are smaller and are solitary in scrobiculi, the androecium is larger and encloses ⅔ of ovary.

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[1] Of the thirteen species of Attalea remaining since Burret's revision of this genus in 1929, three are known to exist in Bahia, *A. funifera* Mart., *A. compta* Mart. and *A. humilis* Mart., all inhabiting the littoral zone. To these should possibly be added *A. oleifera* Barb. Rodr. as existing on the Rio São Francisco. The rather recently described *A. acaulis* Burret, growing in dune formations in the vicinity of the capital, must doubtless be considered as a somewhat depauperate form of the well-known "piassabeira" or piassaba palm, *A. funifera*, which in poor soil fails to form a trunk. There exist, however, several other large and tall-stemmed palms of this genus, sufficiently distinct to have local vernacular designations, "andaia", "piassabossú", "palmeira" and "pindobassu". I have treated of these at some length in a still unpublished paper presented before the botanical section of a recent Geographical Congress in Brazil, but there without the formal latin diagnoses. G. BONDAR

State of Bahia, municipios de S. Antonio de Jesus, Amargosa, Areia, S. Ignez, at altitudes of 200 400 m. Local name "andaia". Leaves used for thatch, the fruit for food, the seeds for oil extraction. Coll. G. Bondar (isotype Field Museum 619759).

Attalea Piassabossu Bondar sp. nov.—Caudex circa 10 m. altus, foliis grandis circa 10 m. longis erectis, petiolis persistentibus fibros duros divergentes marginales ferentibus, vaginis foliolarum fibros ("piassava") crassos duros ferentibus, foliolis 1 m. longis suboppositis, 6 cm. latis, aequidistantibus saepe flaccidis, lateris foliae angulo 160° divergentibus. Spadix masculinus 1.8–2 m. longus, pedunculo 0.8–1 m. longo, ferrugineo-tomentoso subcylindraceo, rachite alba scabra non tomentosa nodosa, ramis basin crassis; floribus basalibus grandis sparsis, in scrobiculis binis, floribus superioribus solitariis et coactatis; petalis 25–30 mm. longis lanceolati-acuminatis medio latissimis, marginibus levibus; staminibus florum basalium 7, florum apicalium 6, 10–11 mm. longis. Spadix androgynus 2 m. longus, floribus foemininis albellis grandis 3 (una abortiva 2 m. longa, duo 6–7 mm. longis), sepalis apice rotundis marginibus levibus; androecio cupulari, margine levi vix sinuoso haud dentato. Drupa ferruginea oblonga, obtuse-acuminata, 9 cm. longa diametro 5.5–6 cm., perianthio ¼ drupae altitudine alto, petalis apiculatis; exocarpio fibroso 1.5–2 mm. crasso, mesocarpio 5–6 mm. crasso, endocarpio duro 8–10 mm. crasso; seminibus 1–3, putamine oblongo transverse circulari vix fibroso.

Differs from *A. compta* Mart. in size of flowers and number of stamens, from *A. funifera* Mart. in its simply pectinate leaves which are not plumose, with segments not in groups, and in its thick piassava fiber and different flowers; from *A. Burretiana* Bondar in its less recurved leaves, its larger flowers and drupes.

Bahia, municipios adjacent to capital, where it grows in association with *A. Burretiana* on soils of gneissic-primary origin and with *A. funifera* on tertiary soil. Vernacular name "piassabossú". The leaves are employed for thatch; the kernels are edible and used for oil. Municipio de Bahia, Alegre, coll. G. Bondar (isotype Field Museum 619762).

Attalea Pindobassu Bondar, sp. nov.—Caudex ad 15 m. altus levis nonnumquam partim inaequalis atque nodosus, petiolis 2–3 m.

longis persistentibus, foliis ad 12 m. longis erectis atroviridibus, petiolo et rachite dorsale ferrugineo-tomentosa, superiore atroviridi, foliolis 60–70 cm. longis, 3.5–4.5 cm. latis, suboppositis 5–6 mm. in eadem plana aequidistantibus nonnihil pendulis, lateris foliae angulo 180° divergentibus. Spadicis masculini pedunculus 1 m. longus subcylindraceus tomentoso-ferrugineus, rachite albotomentosa, floribus 16–18 mm. longis, 6–7 mm. latis, in scrobiculis solitariis alternatim et lateraliter dispositis, petalis imbricatis latolanceolatis incurvatis apiculatis, marginibus irregularibus minute serratis, staminibus 12 (raro 11) ⅔ longitudinem floris attingentibus. Spadicis androgyni flores foemininae albellae, bracteis 3 (1 parvo abortivo, 2 majoribus), sepalis imbricatis vix apiculatis, marginibus levibus, petalis apiculatis marginibus levibus, disco cupulari margine levi. Drupa ferrugineo-tomentosa oblonga apiculata rostrata 8–9 cm. longa, diametro 4.5–5 cm., perianthio ⅓–½ drupae altitudine alto, disco androecio diametro 3 cm. lato margine levi, exocarpio duro ligneo fibroso 4–5 mm. crasso, mesocarpio pulposo albo oleagineo 1.5 mm. crasso, endocarpio osseo 6–8 mm. crasso, putamine 7 cm. longo rostrato, seminibus 1–3 raro 4–5.

Differs from other Attaleas of Bahia in number of stamens (12), a number most nearly approached in *A. compta* Mart. (with 10 to 12). It differs from the latter in having longer male flowers and drupes covered to greater extent by perianth.

Bahia, center of state, municipios de Campo Formoso, Saúde, Jacobina, Miguel Calmon, at altitudes of 400–700 meters. The tree fruits after forming a trunk of 2–3 m. Old leaf stalks are long persistant. Vernacular name "pindobassú". Serra de Ouro, coll. G. Bondar (isotype Field Museum 619761).

HAWAIIAN PITTOSPORA

SOME MEXICAN COREOPSIDEAE

A NOTE ON XYLOSMA HAWAIIENSE SEEM.

BY

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REVISION OF THE HAWAIIAN MEMBERS OF THE GENUS PITTOSPORUM BANKS[1]

EARL EDWARD SHERFF

INTRODUCTION AND HISTORICAL NOTES

The bibliography of the genus *Pittosporum* Banks may properly begin with Joseph Gaertner's De Fructibus et Seminibus Plantarum 1: 286. 1788. In that work Gaertner published a four-line generic description which he had found in Dr. Solander's papers, and described in detail two new species, *P. tenuifolium* and *P. umbellatum*. The former he illustrated as to fruits and seeds (*tab.* 59, *fig.* 7). From time to time other new species were described until, in 1862, Bentham & Hooker (Gen. Pl. 1: 131) were able to state the total number known as about 50 ("species ad 50, in Africa, Asia calidiore, insulis Pacificis, Australia v. Novae Zelandia crescentes"). Bentham & Hooker presented an amplified description and this apparently has served as a model for most if not all subsequent students of the genus.

Nearly all these earlier known species were from elsewhere than the Hawaiian Islands and so may be omitted here. We may note, however, that, in 1832, Hooker & Arnott (Bot. Beechey's Voy. 110) described the first endemic Hawaiian species, *P. glabrum.* Some time later Asa Gray, in his Botany of the United States Exploring Expedition (1: 232. 1854), included nineteen species of *Pittosporum* and among these were two additional Hawaiian species: *P. Terminalioides* Planchon, with one or doubtfully two varieties, and *P. confertiflorum* A. Gray. The latter he illustrated (*tab.* 19). Young Horace Mann, Jr., visited the Hawaiian Islands May 4th, 1864, and botanized extensively (with William T. Brigham) upon five members of the archipelago until May 18th of the following year. He collected many specimens of the genus and published three supposedly new species (Enum. Haw. Pl. nos. 18, 20, and 22; Proc. Amer. Acad. 7: 150–152. 1867): *P. cauliflorum, P. spathulatum,* and *P. acuminatum.* Of these the first and third are accepted as good species, and even the second is valid as a variety of *P. glabrum.*

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[1] Native Hawaiian name for this genus, *Hoawa* (*fide* Hillebrand Fl. Haw. Isls. 22. 1888).

The first really comprehensive treatment of *Pittosporum* in the Hawaiian Islands was given, as for so many other genera, by William Hillebrand (Fl. Haw. Isls. 21–27. 1888). Hillebrand described four supposedly new species: *P. glomeratum, P. kauaiense, P. insigne,* and *P. hawaiiense.* He introduced eight new varieties among the various species and gave an analytical key to the ten species treated in his text. All but the first one of his four new species are accepted in the following pages, and even the first, *P. glomeratum,* is retained, but with varietal rank under *P. glabrum.* Hillebrand's key is of the dichotomous type and partly artificial. It makes no attempt to include individual varieties but does attempt to guide one directly to the proper species. Like many of Hillebrand's keys, it is now hopelessly out of date and has value chiefly as affording to the monographer or other advanced student an insight into Hillebrand's species-concepts. Hillebrand had resided in Honolulu for twenty years and had made most vigorous and brilliant studies of the Hawaiian plants. Withdrawing to Europe in 1871, he spent much additional time studying the Hawaiian Flora with the aid of library and herbarium materials, almost up to his death in 1886. Many of his Hawaiian collections had been sent previously to 1870 to Dr. Hooker at Kew or to Dr. Gray at Harvard University and are still well preserved. To these I have had access for the present revisional study. Hillebrand's large private herbarium, however, was finally deposited at the Botanical Museum in Berlin. Because of the present war-conditions, the *Pittosporum* specimens of this private herbarium are now inaccessible for examination, but the authorities of the Berlin Botanical Museum (at the Berlin Botanical Garden) have generously supplied photographs of the more important specimens not duplicated in the Gray or Kew herbaria.

In 1910, Joseph F. Rock (Bull. Torrey Bot. Club 37: 297, fig. 1; also Rept. Haw. Board Agr. and For. Div. For. 84, pl. 20. 1911) added another species to the Hawaiian *Pittospora, P. Hosmeri,* a species with mammoth capsules, these up to 7.5 cm. long and to 5.5 cm. wide. In 1911 (College Haw. Publ. Bull. 1: 16, pl. 4) he added still another species, *P. halophilum* (erroneously printed *P. halophylum, loc. cit.*). Shortly afterwards he presented a revised treatment of the arborescent Hawaiian species (Indig. Trees Haw. Isls. 153–172, pls. 55–64. 1913). In this he advanced still a third new species, *P. Gayanum,* also its new var. *waialealae* and the new var. *longifolium* of his *P. Hosmeri.* He gave detailed descriptions and many critical notes, also a key to the species. This key was essentially the earlier one of Hillebrand's, modified slightly to cover the acquisitions since Hillebrand's time.

More recently, E. Pritzel has treated the entire family, Pittosporaceae, for Engler & Prantl's Natürliche Pflanzenfamilien (edit. 2. 18*a*: 265–286. 1930) and has given an especially comprehensive treatment of the genus *Pittosporum* (pp. 273 281, figs. 156 and 157). To his extended bibliography the reader is referred for numerous references that must be omitted here. Pritzel declares that since it is impossible to make a satisfactory arrangement or classification for the genus, he must rely upon the geographic distribution of its species. He states that a systematization of the genus must needs be based on the fruit before everything else, and this with many species is not yet sufficiently well known.[1] He separates the many species of the genus perforce into various great geographic groups, one of them the group endemic in the Hawaiian Islands. He adopts Rock's key *in toto,* merely translating it into the German. He apparently has overlooked *P. halophilum* Rock, the small shrub which Rock himself doubtless had omitted intentionally from his Indigenous Trees of the Hawaiian Islands because it was not really a tree. As it is, he lists the same twelve species treated by Rock.

More recently, Carl Skottsberg (Meddel. Göteborgs Botan. Trädgård 10: 108–110. 1936) has published determinations of various Hawaiian specimens and proposed three new varietal names: *P. Terminalioides* var. *macropus* and *P. cauliflorum* vars. *reticulatum* and *macrophyllum.* The last two are treated in the present text respectively as *P. cladanthum* var. *reticulatum* and *P. cladanthum.* One specimen cited by him (his no. 791) for *P. confertiflorum* A. Gray is listed under *P. Terminalioides* var. *mauiense* of the following treatment.

In recent years an introduced species, *P. undulatum* Vent., has become well established in the Kohala District of the Island of Hawaii. It has been rather fully treated by Otto Degener (Fl. Haw. fam. 156, May 5, 1937).

As an outgrowth of my own examination and revisional study of all available Hawaiian specimens of *Pittosporum,* a considerable number of additional species, varieties, and forms have come to light. These have been published in two recent papers (Amer. Journ. Bot. 28: 18–31. 1941; Field Mus. Bot. Ser. 22: 407–441. 1941). The present paper represents an attempt to consolidate the information contained in these other two papers with the main body of factual material in Hillebrand's Flora and elsewhere, and thus to afford as nearly serviceable a revisional or monographic treatment of the native and naturalized *Pittospora* of the Hawaiian Islands as the present state of our knowledge will permit.

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[1] These observations by Pritzel are so especially appropriate for the Hawaiian species of *Pittosporum* that they are reproduced here verbatim: "Da eine befriedigende natürliche Gliederung der Gattung noch nicht gegeben werden kann, so bleibt nichts anderes übrig, als sie nach ihrer Verbreitung zu behandeln. Ein künftiges System der Gattung wird sich vor allem auf die Frucht zu gründen haben, und diese ist bei vielen Arten noch nicht genügend bekannt."

As an almost absolutely necessary preliminary step to a comprehension of the Hawaiian species of *Pittosporum,* the student should ponder the remarks of Hillebrand, who had, during his long residence in the Hawaiian Islands, an excellent opportunity to collect and observe the specimens first-hand. These are so important that the liberty is taken of reproducing them herewith: "The Hawaiian species have bivalvular capsules,[1] distinct sepals, and the petals slightly cohering beyond their middle, while their blades are reflexed or expanded in salver-shape. The flowers in all of them are dimorphous, that is, they are of two kinds: *fertile* or *pistillate* (with a fully developed round ovary, easily distinguishable from the style, which equals or exceeds the tube of the corolla and bears a capitate 2-lobed stigma, while the stamens are only about half the length of the tube, and their slender barren sagittate anthers converge around the ovary) and *sterile* or *staminate* (the corolla is generally larger, the slender ovary passes gradually into the style, which, although of the same length as in the fertile flowers, ends in a truncate or bidentate stigma, while the stamens are as long as the tube of the corolla, or even longer, and bear full-sized oblong anthers). With this dimorphism would seem to run parallel a diclinism in some species, inasmuch as individual trees are found with only fertile or sterile flowers. In species where both sexes are combined on one plant the sterile inflorescences mostly occupy the apex or upper leaf-whorls, and the fertile ones the lower whorls or the bare branch; but there are species in which flowers of both sexes appear intermixed and without an appreciable difference in the size of the corollas. Furthermore, it may fairly be assumed that in a set of so closely related species the fertilization of which depends altogether on the concurrence of insects, hybrids will not be wanting. From all these circumstances results a complexity of characters which renders the exact limitation of each species very difficult, and it is to be hoped that

[1] Not always. For mention of 3- or even 4-valved capsules see footnote under *Pittosporum Terminalioides* var. *macropus,* p. 518.

a closer attention to them by future collectors will result in a more satisfactory arrangement of a genus of plants which until now has shown itself very refractory in the hands of systematists.

"A good principle of distribution [*sic*] may possibly be afforded by the capsules, which are either ovoid or subquadrangular and deeply wrinkled or furrowed, or compressed and smooth; but, as the mature fruits of many forms are not known yet, division can, for the present, not be based upon them. It happens, however, that the characters relied upon [in the synoptical key] . . . although apparently irrelevant, coincide to some extent with those afforded by the capsules and also with the color of the flowers."

In addition, some of the remarks about *Pittosporum* species by J. F. Rock (*op. cit.*), who collected for many years in the Hawaiian Islands and made special studies of the ligneous species, may well be introduced here: ". . . in the Hawaiian Islands, where they have reached a wonderful development. The species are dependent on the insects for pollination. The flowers of the Hawaiian species are dimorphous; that is, they are of two kinds—fertile and sterile. It is very difficult to render the exact limitation of each species, which is shown by the fact that the writer has found capsules belonging to three different species on a single inflorescence, on a tree found on the island of Lanai [p. 153] . . . . It is exceedingly difficult properly to diagnose the Hawaiian species of Pittosporum and more so the varieties [p. 161] . . . the species *confertiflorum* evidently being very variable, as there are as many different forms as there are Pittosporum trees and one would be naming individual trees. It is indeed puzzling, the question of specific distinction in the Hawaiian Pittosporums, thanks to the insects on which the plants depend for pollination [172]."

From these remarks of Hillebrand and of Rock it is evident that any revisional treatment of the *Pittospora* of the Hawaiian Islands must for many years to come, and until a vast amount of additional field-observations and perhaps also experimental studies can be made, be open to various criticisms. The question, for example, of possible hybridity in the case of any or most novelties recently placed on record is a troublesome one. Obviously, most newly found entities could be assumed by pure hypothesis to have been derived through hybridization of one form with another in the past and thus numerous assumed hybrids could be listed. But a similar course could perhaps as well be followed in many other genera. In such case we should have, it is feared, not an orderly, systematic arrangement or schematic exposition of taxonomic entities that could henceforth be utilized easily or conveniently by students of the Hawaiian flora, but rather an unwieldy assemblage of guesswork products, most of them so manifestly hypothetical as to discourage their use. I have chosen the alternative course of treating each taxonomic entity, therefore, and until such time as evidence is adduced to the contrary, as being assumedly pure and entitled *per se* to occupy a definite category of *specific* or subordinate rank. It has been felt, moreover, that this procedure will have paved the way for a more successful attack in the future upon hybridity-problems by students who may care to study them. Incidentally, it may be observed here that students of the genus in the Hawaiian Islands must be prepared to evaluate the significance of any one diagnostic criterion quite differently in different species. Thus, for example, in certain species such as *P. glabrum* and *P. sulcatum*, the respectively smooth (*i.e.*, erugose) or much wrinkled or roughened (rugose) capsule constitutes a fairly reliable character, whereas in such a species as *P. flocculosum* (assuming of course that this is a pure species) it is utterly untrustworthy. So, too, with the matter of having some of the inflorescence terminal. With *P. confertiflorum*, for example, this appears a good character, while with *P. glabrum* it is so capricious as to have little taxonomic value. It is much to be hoped that collectors in the Hawaiian Islands will henceforth pay special attention to *Pittosporum* species in the field and obtain for herbaria large quantities of representative specimens. Especially is it urged that these be accompanied with the fullest notes as to ecological nature of the habitat, fruticose *versus* arborescent habit, color and presence or absence of odor in the fresh flowers, presence or absence of some *truly terminal* inflorescences on the branches, etc. In this way it should be possible for the future monographer to effect no little improvement in the admittedly preliminary and in some respects unsatisfactory treatment herewith set forth.

Much of the trouble in making a workable key for Hawaiian *Pittospora* lies in the fact that numerous subspecific entities, namely varieties and forms (*formae*), occur. While these have their individual criteria by which they usually can be recognized, they nevertheless afford so many intermediate characters as to make their respective species seem to intergrade or even overlap. For this reason, a key like Hillebrand's or Rock's, based entirely on morphological characters and purporting to lead at once to the proper species for the entire group of the Hawaiian Islands, can be of little value. Perhaps as often as not it will lead to the wrong species. To obviate this difficulty I have first divided all species, varieties, and forms into geographic groups, one for each of the larger Hawaiian Islands (doing from sheer necessity what Pritzel, *loc. cit.*, did for the major geographic units of the world). I have then treated each species, variety, and form as a separate entity and, wherever feasible, have set it off separately in the key. Concomitantly with this procedure, each textual description has been drawn (as in all my other monographic works to the present date) to exclude subordinate taxonomic entities.[1] It is my sincere conviction that only in this way can most revisional treatments, in the present state of our knowledge and in cases where the groups studied are large and contain numerous subspecific categories or units, conduce to the proper degree of precision in taxonomic concept.

As in the case of my previous revisional studies, many photographs of the more important herbarium specimens have been taken. As formerly, a complete set has been retained for my own private collection and a duplicate set deposited in the Herbarium of Field Museum of Natural History.

To the authorities of Field Museum of Natural History, who have afforded the fullest opportunities for conducting the research summarized in the following pages, also to the authorities of all other co-operating institutions and to the several individual botanists that have lent their generous assistance, it is a pleasure to express here my appreciation and thanks.

Genus **PITTOSPORUM** Banks: Description

Banks *ex* Gaertner, Fruct. Sem. Pl. 1: 286, *tab.* 59, *fig.* 7. 1788.[2]

Shrubs or small trees, with us evergreen, the leaves often crowded in false whorls (two successive such whorls separated by a false internode which in reality is several consecutive true internodes combined, their intervening true nodes marked at least in youth by much reduced now bracteiform leaves), in our species entire (undulate-margined in the naturalized *P. undulatum*) and usually more or less revolute. Flowers in terminal or axillary racemes, panicles or subumbellate clusters. Sepals 5, distinct or at base united. Petals 5, their claws usually erect and often somewhat united to above the middle. Filaments subulate; anthers erect and ovate-oblong, their 2 linear-oblong cells opening by a lengthwise slit. Ovary sessile or shortly stipitate, with 2 or rarely 3–5 parietal placentas or as many cells with 8 or more ovules to each; style always well developed; stigma faintly lobed. Capsule often compressed dorsally to the leathery or finally woody valves; these thick and armed at apex with the persistent stylar base, inwardly bearing placentas lengthwise along their middle, in age often separating and flattening out. Seeds large (±7 mm. long), angular, smooth, exalate, black, with hard testa, embedded in a resinous, viscid pulp (whence the generic name: *πιττα*, pitch, +*σπορος*, seed).—A large genus of about 200 known species, widely distributed in the tropical and subtropical parts of the Eastern Hemisphere, from west Africa eastward to various islands of the Pacific Ocean. In the Hawaiian Islands, one species (*P. undulatum*) naturalized, the rest endemic.

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[1] Thus, for example, *Pittosporum Terminalioides* has been described with peduncles up to 2.5 cm. long and capsular valves up to 2.8 cm. long. Its variety *macropus* has been described with peduncles up to 6 cm. long and its var. *macrocarpum* with capsules up to 4 cm. long.

[2] No attempt is made here to include the various synonyms for the name *Pittosporum* found in literature. These have been summarized by E. Pritzel *in* Engler & Prantl, Nat. Pflanzenfam. edit. 2. 18*a*: 278. 1930.

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KEY

I. Natives of Hawaii

a. Capsules large, commonly 3–7.5 cm. long and 2–5.5 cm. wide or thick.

b. Capsules finally more or less glabrate.
23. *P. Hosmeri* and var. γ *Saint-Johnii.*

b. Capsules remaining more or less tomentose.

c. Leaf-blades mostly 1.5–3 cm. long; capsules globose or in outline broadly oblong, 2.8–5 cm. thick or wide.
23. *P. Hosmeri* var. β *longifolium.*

c. Leaf-blades mostly 5–12 cm. long; capsules ovate or more narrowly oblong in outline, under 2.9 cm. wide.
9. *P. Terminalioides* var. β *macrocarpum.*

a. Capsules smaller.

b. Capsules erugose; natives of northwestern Hawaii.

c. Leaf-blades up to 1.3 dm. long and to 3.3 cm. wide, their margins undulate and their lower surfaces not conspicuously salient-veiny; capsules in terminal clusters, their valves mostly ±1 cm. long excluding the stylar beak.
20. *P. undulatum.*

c. Leaf-blades up to 1.9 dm. long and to 6.5 or even 8 cm. wide, their margins not undulate, their lower surfaces conspicuously salient-veiny; capsules in axillary or cauline clusters, their valves ±2.3 cm. long excluding the stylar beak . . . . 5. *P. amplectens.*

b. Capsules more or less rugose.

c. Capsules finally more or less glabrate . . . . . 24. *P. hawaiiense.*

c. Capsules remaining mostly pubescent.

d. Leaves finally more or less glabrate beneath.
9. *P. Terminalioides.*

d. Leaves mostly remaining tomentose beneath.

e. Leaves mostly pale brownish- or whitish-tomentose beneath; sepals broadly ovate.
21. *P. confertiflorum* sensu stricto.

e. Leaves mostly rufo-tomentose at least into or through submaturity.

f. Inflorescences mostly terminal, lateral ones if present having peduncles mostly under 2 cm. long.
21. *P. confertiflorum* var. β *Mannii.*

f. Inflorescences mostly lateral, peduncles up to 6 cm. long; native of southwestern Hawaii.
9. *P. Terminalioides* var. γ *macropus.*

II. Natives of Kauai

a. Leaves of peduncles commonly much reduced and bracteiform.

b. Shrub ±1.5 meters tall; leaves glabrous even when very young, obovate-oblong, their blade 5–10 cm. long and 2–3.5 cm. wide; native of bog at very summit of Waialeale.
14. *P. Gayanum* var. β *waialealae.*

b. Trees or tall shrubs.

c. Leaves conspicuously reticulate with veins depressed above and salient beneath, when young covered on both surfaces with dark-brown or reddish-brown tomentum and in age remaining more or less so beneath, their blades mostly 4–10 cm. wide.........................14. *P. Gayanum.*

c. Leaves moderately reticulate with but slightly depressed or salient veins.

d. Leaves glabrous, their blades mostly 2–5 cm. wide.
1. *P. acuminatum* and vars.

d. Leaves mostly more or less white- or brown-setose beneath with appressed setae (or if not, then the branchlets conspicuously brown-tomentose), their blades 4–8.5 cm. wide.

e. Capsules mostly 2–3 cm. long.......15. *P. flocculosum.*

e. Capsules 1.1–1.8 cm. long.

f. Sepals lanceolate to ovate, acute at apex, pubescent or irregularly glabrate, 1.5–2 mm. long; corolla slender, tube 4–7 mm. long, oblong lobes 2–3 mm. long; pedicels very delicate.
17. *P. kauaiense* and vars.

f. Sepals widely ovate, obtuse at apex, tomentose, 4–5.5 mm. long; corolla-tube about 7–8 mm. long, -lobes ovate and ±5 mm. long; pedicels robust.
18. *P. napaliense.*

a. Leaves of peduncles only moderately reduced and not bracteiform; capsules in age more or less glabrescent, their valves marked lengthwise with a median groove . . . . 2. *P. Helleri.*

III. Natives of Lanai

a. Inflorescence axillary or cauline.
  b. Mature leaves more or less tomentose (through perhaps very irregularly so) beneath.
    c. Leaves numerous, crowded, small, their blade 6–8 cm. long and 2–4 cm. wide; capsular valves about 1.5 cm. long.
9. *P. Terminalioides* var. ε *lanaiense.*
    c. Leaves few, subremote, their blade usually 8–12 cm. long and usually 3.5–5 cm. wide (very young leaves much flexed and densely fulvo-tomentose or fuzzy); capsular valves ±2 cm. long . . . . 13. *P. cladanthum* var. β *gracilipes.*
  b. Mature leaves usually glabrous or glabrate (rarely with a few straightish hairs) beneath . . . . . . 6. *P. sulcatum* var. β *Remyi.*

a. Inflorescence now terminal now in the upper leaf-axils, seldom cauline.
  b. Leaf-blades usually 3–7.5 cm. long and 1.3–3.5 cm. wide; capsules under 1.5 cm. long.
21. *P. confertiflorum* var. δ *microphyllum.*
  b. Leaf-blades and capsules larger.
    c. Capsules strongly rugose, 2–3 cm. long.
21. *P. confertiflorum* var. β *Mannii.*
    c. Capsules smoothish or but slightly rugose, not or barely 2 cm. long . . . . 22. *P. halophiloides.*

IV. Natives of Maui

a. Lower leaf-surfaces mostly appressed-tomentose or scurfy-hispid (hairs argenteous and often partly transformed into a very thin integument) . . . . 16. *P. argentifolium* and vars.

a. Lower leaf-surfaces glabrate, tomentose, tomentulose, or sparsely appressed-setose.
  b. Leaves more or less brown- to red-woolly beneath.

c. Inflorescences axillary or cauline.
9. *P. Terminalioides* var. *δ mauiense.*

c. Inflorescences or at least some of them terminal.
21. *P. confertiflorum* and vars.

b. Leaves otherwise.

c. Leaves thickish, more or less glossy above, the reticulate venation conspicuous.
19. *P. insigne* and vars. *β Lydgatei* and *γ micranthum.*

c. Leaves thin, dull, their venation inconspicuously reticulate; capsules only mildly or minutely rugose, under 2 cm. long; native of southeasternmost East Maui.
3. *P. glabrum* var. *ε Tinifolium.*

V. Natives of Molokai

. Leaf-blades mostly retaining at maturity much of the pubescence (this in age matted, appressed, grayish-white, somewhat scurfy) on their upper surface, commonly 5–8 cm. long and 1.8–3 cm. wide; species known only from Puu Kolekole. . 8. *P. Forbesii.*

. Leaf-blades at maturity essentially glabrous or glabrate above.

b. Small shrub about 1 meter tall, litoral; leaf-blades obovate, mostly rounded at apex, only 3.5–6.5 cm. long but 2–3.5 cm. wide, even at maturity beautifully and densely tomentose underneath with a yellowish- or reddish-brown wool; known only from Kalawao of the north coast. . . . 12. *P. halophilum.*

b. Trees or tall shrubs, mostly 3–7 meters tall, rarely if ever litoral; leaf-blades mostly larger, in maturity glabrate to appressedly and more or less irregularly whitish-tomentose beneath.

c. Capsules mostly more or less erugose.

d. Capsules remaining at maturity more or less tomentulose.
3. *P. glabrum* var. *β spathulatum* and f. 1. *subcandidum.*

d. Capsules at maturity glabrate.
19. *P. insigne* var. *δ Hillebrandii.*

c. Capsules mostly rugose.

d. Capsules at maturity mostly glabrate.

e. Sepals mostly 0.5–0.6 the length of the corolla-tube.
6. *P. sulcatum.*

e. Sepals mostly 0.25–0.3 the length of the corolla-tube.
19. *P. insigne* var. *Fosbergii* and f. 1. *pertinax.*

d. Capsules at maturity remaining more or less tomentulose.

e. Leaf-blades ±2.9 dm. long and ±9–10 cm. wide.
19. *P. insigne* var. ζ *pelekunuanum.*

e. Leaf-blades commonly under 2 dm. long and under 7 cm. wide..............6. *P. sulcatum* var. β *Remyi.*

VI. Natives of Oahu

a. Leaves essentially glabrous beneath or but sparsely setose, unless when very young.

b. Capsules rugose and more or less sharply sulcate.

c. Capsules pubescent, especially in their furrows.
6. *P. sulcatum* var. β *Remyi* and var. γ *Rumicifolium* f. 1. *tomentellum.*

c. Capsules glabrate or only very sparsely pubescent.

d. Leaf-blades 12–20 cm. long and up to 5 cm. wide, commonly with a few appressed setae beneath near midvein; native west of the Koolau Mountains Divide.
7. *P. dolosum* var. β *aquilonium.*

d. Leaf-blades commonly smaller or, if not, *then* entirely glabrous beneath.

e. Leaves glabrous or glabrate, drying dark-green to somewhat brownish; a species widely distributed on Oahu.
6. *P. sulcatum* and var. γ *Rumicifolium.*

e. Leaves at least some of them with a few scattered, appressed hairs beneath, drying more brownish to reddish-brown; native of Land-Section Punaluu and of area slightly southwest....................7. *P. dolosum.*

b. Capsules not or but obscurely rugose..3. *P. glabrum* and vars.

a. Leaves mostly tomentose or very strigose beneath, unless in age.

b. Capsules definitely rugose and more or less sulcate.

c. Leaf-blades strigose or strigose-scurfy beneath, unless in age.

d. Leaf-blades 1–2.5 dm. long and 4–9.5 cm. wide.
15. *P. flocculosum.*

d. Leaf-blades 4–8 cm. long and 1.2–2.5 cm. wide.
10. *P. kahananum.*

c. Leaf-blades tomentose or tomentulose beneath, unless in age.

d. Inflorescence terminal (but the fruiting one finally often axillary by the development of a terminal shoot).
21. *P. confertiflorum* var. β *Mannii.*

d. Inflorescence axillary or cauline.
13. *P. cladanthum* and var. γ *reticulatum.*

b. Capsules erugose or but slightly rugose, not definitely sulcate.

c. Leaf-blades strigose or strigose-scurfy beneath, unless in age.
15. *P. flocculosum.*

c. Leaf-blades tomentose or tomentulose beneath, unless in age.
11. *P. cauliflorum* and vars. β *pedicellatum* and γ *cladanthoides.*

ABBREVIATIONS USED FOR HERBARIA CITED

Arn.	Herb. Arnold Arboretum, Jamaica Plain, Massachusetts.
Berl.	Herb. Berlin Botanical Garden, Berlin-Dahlem.
Bish.	Herb. Bernice P. Bishop Museum, Honolulu.
Calif. Acad.	Herb. California Academy of Sciences, San Francisco.
Corn.	Herb. Cornell University, Ithaca.
Deg.	Herb. of Otto Degener, Waialua, Oahu, Hawaii Territory.
Del.	Herb. Delessert, Geneva.
Field	Herb. Field Museum of Natural History, Chicago.
Goth.	Herb. Arboretum Gothenburg, Sweden.
Gray	Herb. Gray, Harvard University, Cambridge, Massachusetts.
Kew	Herb. Royal Botanic Gardens, Kew.
Minn.	Herb. University of Minnesota, Minneapolis.
Mo.	Herb. Missouri Botanical Garden, St. Louis.
N.Y.	Herb. New York Botanical Garden, New York City.
Par.	Herb. Museum of Natural History, Paris.
U.S.	Herb. United States National Museum, Washington.
Yunck.	Herb. Truman George Yuncker, Greencastle, Indiana.

1. **Pittosporum acuminatum** H. Mann, Enum. Haw. Pl. no. 22 (Proc. Amer. Acad. 7: 152). 1867.

a. Peduncle and axis of inflorescence glabrous or glabrate even from first; native of southwestern Kauai.......... var. β *leptopodum.*

a. Peduncle and axis of inflorescence more or less hispid or tomentose unless in old age.

b. Sepals mostly subulate to broadly lanceolate.

c. Leaf-blades commonly 1.5–2 dm. long and 4–6 cm. wide, -petioles 1–3.2 cm. long; capsular valves with a rough, lengthwise, median ridge; native of eastern Kauai.
var. δ *magnifolium.*

c. Leaf-blades commonly smaller, -petioles mostly 0.7–1.7 cm. long; capsular valves not or but imperfectly median-ridged; native of western Kauai...... *P. acuminatum* sensu stricto.

b. Sepals (at least of sterile flowers) widely ovate, at apex usually obtuse.

c. Leaves mostly 2–4.3 cm. wide, thickish, subglossy, on upper surface rather conspicuously reticulate-veined, the veins impressed above and salient beneath; peduncles numerously bracteate, bracts flagelliform, suberect, 5–9 mm. long; native of eastern Kauai.................. var. γ *Degeneri.*

c. Leaves mostly 4–6.5 cm. wide, thinnish, dull, on upper surface subobscurely veined, the veins neither impressed above nor very salient beneath; peduncles commonly 1- or 2-bracteate with bracts 3–5 mm. long; native of southwestern Kauai...................... var. ε *waimeanum.*

Small tree 4.5–6 meters tall, branches slender, youngest shoots densely and antrorsely appressed-hispid with brownish or "pale" setae. Leaves thin-chartaceous to subcoriaceous, widely to narrowly oblanceolate or subspatulate, apically acute to shortly acuminate, glabrous, minutely revolute, gradually narrowed below into a slender petiole ±1 cm. long or the upper ones subsessile, blade 8–17 cm. long and 2–4.5 cm. wide, often irregularly blackened on dull or at times glossy upper surface with patches of fungous infection (*Capnodium lanosum fide Rockii in herb.*). Sterile flowers from the uppermost leaf-whorl, in corymbose racemes of 2.5–5 cm. in length, or at times on long foliose axes with flowers single in axils of reduced leaves; pedicels ±2.5 cm. long, pubescent; bracts and sepals subulate, ±7 mm. long; corolla white, its tube about 11 mm. long, its lobes long and acute. Fertile flowers from subterminal or lower axils, in corymbose, 3–11-flowered racemes; peduncle slender (at anthesis ±0.5 mm. in fruit ±1.5 mm. thick), at first brownish-tomentulose but finally more or less glabrate and ligneous, commonly 4–8.5 cm. long, floriferous near top or at most usually in upper third but bracteate throughout length; bracts subulate, subsparsely tomentose, appressed or suberect, 3–8 mm. long, in age deciduous; pedicels delicate, brownish-tomentulose, 6–20 mm. long; sepals lanceolate-subulate or a few ovate, attenuate, dorsally glabrate, marginally ciliate or minutely more or less erose-laciniate, about 4–5 mm. long; corolla-tube 7–10 mm. long, lobes ovate or ovate-oblong, about 5 mm. long. Ovary densely brownish-tomentose; style delicate, gradually dilated upward, glabrate, usually exceeding the ovary;

stigma capitate. Capsule subglobose to thick-ovoid, subquadrate, densely brownish-tomentulose, deeply tuberculate-roughened and more or less wrinkled, 14–18 mm. long exclusive of the slender, persistent stylar beak (this when intact about 4.5–5 mm. long). Seeds comparatively few and plump, 6–7 mm. long.

Type specimen: Collected by *Horace Mann & William T. Brigham*, No. 603, at altitude of 3,000 feet, on the mountains above Waimea, Island of Kauai, 1864–1865 (Corn. and Gray).

Distribution: Western Kauai.

Specimens examined (all from Kauai): *Otto Degener* 10,987, in forest, Kokee Camp, June 26, 1926 (Berl.; Deg.; Field, 2 sheets); *Degener* 10,994, in forest, same locality, June 23, 1926 (Field); *Abbé Urbain Faurie* 14, Hanapepe, December, 1909 (Del., 2 sheets; Par.); *Faurie* 19, alt. 1,000 meters, Waimea, March, 1910 (Arn.; Del., 2 sheets); *Charles N. Forbes* 4-*K*, on ridge at foot of Kahili, July 8, 1909 (Berl.; Field, 2 sheets; Kew; Par.); *Forbes* 236-*K*, Wahiawa Mts., August, 1909 (Berl.; Bish.; Field; Kew); *Forbes* 856-*K*, Waimea Drainage Basin, July 3–August 18, 1917 (Bish.); *Forbes* 870-*K*, same locality and date (Bish.; Field; leaves smaller); *Amos Arthur Heller*, ridge west of Hanapepe River, July 17, 1895 (Field); *Heller* 2,456, on the Hanapepe and Wahiawa Watershed, June 28, 1895 (Arn.; Kew; Minn.); *Heller* (similarly) 2,456, on the ridge west of Hanapepe River, same date (Berl.; Bish.; Corn.; Field; Gray; Kew; N.Y.; Par.; U.S.); *Heller* (similarly) 2,456, same locality, Aug. 22, 1895 (Mo.; U.S.); *Mann & Brigham* 603 (type collection, Corn.; Gray); *Joseph F. Rock*, Kauai, October, 1916 (Bish.); *Rock* 2,017, not common, around Halemanu, February 14–26, 1909 (Arn.); *Rock* 2,031, Halemanu, same date (Bish.); *Rock* 2,032, same locality and date (Arn.); *Rock* 2,033, Mohihi, February 14, 1909 (Gray); *Rock* 5,221, in woods of Waimea, September 10, 1909 (Bish.; leaves smaller); *Rock* 5,222, same locality and date (Field; leaves small, as in *Rock* 5,221); *Rock* 5,223, same locality and date (Field; leaves small, as in *Rock* 5,221 and 5,222); *Rock* 5,224, Kauai, September, 1909 (Bish.; leaves small, as in *Rock* 5,221, 5,222, and 5,223); *Rock* 5,226, in woods, Kaholuamanu, September, 1909 (Gray; N.Y.); *Rock* 5,227, in woods, Waimea, "leaves infested with *Capnodium lanosum*," September 10, 1909 (Field; form connecting *Rock* 5,221, 5,222, 5,223, and 5,224 with typical form, as to leaf-size, of the species proper); *Rock* 5,229, same locality and date (Arn.); *Rock* 5,231, same locality and date (Arn.; leaves small); *Rock* 5,811, in woods back of Makaweli, September, 1909 (Arn.);

Rock 5,814, in woods above Makaweli, same date (Bish.); *Rock* 5,849, same locality, September 28, 1909 (Field); *Rock* 5,850, same locality and date (Arn.); *Mrs. Francis Sinclair, Jr., commun.* January, 1885, Haolanlii (Kauai?—I cannot find this locality on maps; Kew); *Carl Skottsberg* 1,023, between Kokee and Mohihi, Waimea, October 29, 1922 (Goth.).

Described by Rock (Indig. Trees Haw. Isls. 155. 1913) as "a very handsome, graceful tree with beautiful cream-colored, fragrant flowers." My description of the sterile flowers is taken from Hillebrand (Fl. Haw. Isls. 22. 1888), who had had opportunity to observe much material in the field. Hillebrand describes the sterile (male) flowers as fragrant but is silent as to fragrance for the fertile flowers. He describes the fertile flowers, in reality the inflorescence containing them, as coming from the lower leaf-whorls, but in many specimens the peduncles are practically if not indeed truly at the terminus of the branch. A special study should be made of the seeds of this species. On specimens representing several collections, the mature seeds are somewhat shorter and narrower, and noticeably thicker or more plump than for the other Hawaiian species of *Pittosporum*.

The late Dr. John Briquet, of the Delessert Herbarium at Geneva, made a critical study of several Hawaiian Island specimens of *Pittosporum*, in the year 1914. He wrote tentative diagnoses for several species believed by him to be new.[1] These diagnoses are filed with their respective specimens at the Delessert Herbarium. Faurie 19 was proposed by Briquet as a new species, differing from *P. acuminatum* (according to Briquet) in having the axis of its inflorescence tomentose and in having narrow leaves, the upper ones subsessile. Faurie 19 was collected, it may be observed, in the type locality of the species proper. It is not capable even of varietal segregation.[2]

For an apparent hybrid between *P. acuminatum* and *P. kauaiense* var. *phaeocarpum* see under that variety (p. 541).

[1] I cannot find in literature any publication of Briquet's work on these plants. Nor does Dr. B. P. G. Hochreutiner, Briquet's successor at Geneva, know of any such publication. Dr. Hochreutiner wrote me under date of January 8, 1940: "I know of no publication of Briquet concerning *Pittosporum*. I have only seen in our Herbarium some determinations with labels in Briquet's handwriting and sometimes with indications 'spec. nova.' I suppose that these were left in place till Briquet had the opportunity of publishing them, and that he never did."

[2] Briquet, without doubt, had contrasted Faurie 19 with the Delessert Herbarium specimens of Faurie 1, labeled *Pittosporum acuminatum* Mann. In Faurie 1 the axis of the inflorescence is indeed essentially glabrous (see var. *leptopodum*). But *P. acuminatum* proper had its peduncles and pedicels, as may be seen in its type collection (Mann & Brigham 603), tomentulose during anthesis, and thus would include Faurie 19.

Pittosporum acuminatum var. β **leptopodum** Sherff, Amer. Journ. Bot. 28: 20. 1941.

Leaves narrower and thinner, peduncle more slender and a little longer, also glabrate from the first; pedicels more slender, a little longer, glabrate; bracts filiform; sepals lanceolate.

Type specimen: Collected by *Abbé Urbain Faurie,* No. 1, alt. 1,000 meters, Waimea, Island of Kauai, March, 1910 (Par.).

Distribution: Southwestern Kauai.

Specimens examined: *Faurie* 1 (type, Par.: cotypes, Arn. 2 sheets; Del., 3 sheets); *Joseph F. Rock* 2,030, Kaholuamanu, March 3-10, 1909 (Field); *Rock* 17,139, same locality, October, 1916 (Bish.).

Pittosporum acuminatum var. γ **Degeneri** Sherff, Amer. Journ. Bot. 28: 20. 1941.

Bracts of the youngest branches very narrowly linear, conspicuous, more or less glabrous, up to 2 cm. long. Sepals (at least those of sterile flowers) widely ovate, at apex obtuse or sometimes acute or acuminate, dorsally glabrous or more or less pulverulent, 2.5–3.5 mm. long. Capsule unknown.

Type specimen: Collected by *Otto Degener & Emilio Ordoñez,* No. 12,617, six feet tall, on open, rainy ridge, Kaluālēa, Koloa, Island of Kauai, December 31, 1939 (Field).

Distribution: Eastern Kauai.

Specimens examined: *Degener & Ordoñez* 12,617 (type, Field); *Degener & Ordoñez* 12,618, bush, on sunny ridge, alt. 1,200 feet, Kawaiumakua, Anahola, December 26, 1939 (Berl.; Deg.; Field; flowers and fruits lacking); *Abbé Urbain Faurie* 13, Kilauea, January, 1910 (Arn.; Del., 2 sheets; leaf-blades up to 1.5 dm. long and 5.8 cm. wide, petioles long and slender as in var. *magnifolium,* inflorescences sessile and terminal, perhaps through bud injuries); *Harold Saint John & F. R. Fosberg* 13,469, erect shrub, 7 feet tall, flowers white, leaves pale green, in thick brush on very steep slope, alt. 1,320 feet, Laaukahi, Haiku, December 22, 1933 (Field).

While capsules are unknown, the various characters of leaf and inflorescence relate this form unmistakably to *P. acuminatum,* from which it may be distinguished by the widely ovate, not subulate, sepals of its sterile flowers. The numerous and conspicuous bracts (much reduced interverticillate leaves) occurring on the last portion of the branches seem likewise distinctive, most of them being much more elongate than in the species proper or in var. *magnifolium.*

The variety was named for Mr. Otto Degener, the well known authority on the Hawaiian flora, in appreciation of his invaluable aid in supplying numerous specimens of *Pittosporum* for my revisional study of the Hawaiian members of the genus.

Pittosporum acuminatum var. δ **magnifolium** Sherff, Amer. Journ. Bot. 28: 20. 1941.

Bracts of youngest branches (which are brown-tomentose) sharply subulate, commonly under 1 cm. long. Petioles slender, 1–3.2 cm. long; blades commonly 1.5–2 dm. long and 4–6 cm. wide, conspicuously acuminate, when nascent appressedly brown-hispid along the veins. Peduncle commonly under 2 cm. long. Capsule really more rugose, 1.7–2.3 cm. long; valves with a rough, lengthwise, median ridge.

Type specimen: Collected by *Rev. John M. Lydgate,* Kalihiwai, northeastern coast of Island of Kauai, in 1915 (Bish.).

Distribution: Eastern and north-central Kauai.

Specimens examined: *Abbé Urbain Faurie* 12, Wainiha, January, 1910 (Arn.; Del.); *Charles N. Forbes* 616-*K*, Hii Mts., October 20, 1916 (Bish.; Field; Mo.); *Forbes* 653-*K*, same locality, October 22, 1916 (Bish.; Field); *Forbes* 676-*K*, same locality and date (Bish.; Mo.); *Lydgate,* Kalihiwai, 1915 (type, Bish.); *Lydgate,* Waialua (Wailua) Mts., Pole Line Trail (Bish.).

Pittosporum acuminatum var. ε **waimeanum** Sherff, Field Mus. Bot. Ser. 22: 429. 1941.

Leaves thinner, blade often 1.3–1.7 dm. long and 4–6.5 cm. wide, not glossy, the small nerves obscure above; petiole slender, 1–3.5 cm. long; peduncles slender, commonly 1–3.5 cm. long, few- (more often 1- or 2-) bracteate, bracts narrowly subulate, 3–5 mm. long; sepals widely ovate, over much of their surface brown-pubescent, about 3 mm. long; capsule brown-pubescent nearly all over.

Type specimen: Collected by *Abbé Urbain Faurie,* No. 3, at altitude of 1,000 meters, Waimea, Isl. Kauai, March, 1910 (Par.).

Distribution: Known only from type locality in southwestern Kauai.

Specimens examined: *Faurie* 3 (type, Par.: cotypes, Arn.; Bish.; Del.).

2. **Pittosporum Helleri** Sherff, Amer. Journ. Bot. 28: 23. 1941.

In habit of foliage very similar to *P. acuminatum.* Leaves more often 10–12 cm. long and 2–3 cm. wide, commonly smoother.

Peduncle of female inflorescence (at least finally) glabrous, 3–8-flowered, at times truly terminal; more often axillary, elongate, branch-like and foliose with leaves 4–10 cm. long and 1–2 cm. wide; pedicels slender, at anthesis very shortly spreading-hispidulous and ±1 cm. long, finally glabrous and perhaps a little longer. Flowers unknown. Capsule ovoid, quadrate, at base rounded or truncate, at first densely brown-tomentose but finally more or less glabrescent; valves tuberculate-rugose, cordate at base, marked lengthwise with a median groove, 1.5–2.4 cm. long (excluding the slender, ±5 mm. long style) and subequally wide.

Type specimen: Collected by *Amos Arthur Heller*, No. 2,783, on Kaholuamanu, above Waimea, Island of Kauai, September 2–9, 1895 (Gray).

Distribution: Known only from type locality in southwestern Kauai.

Specimens examined: *Heller* 2,783, on Kaholuamanu, above Waimea, August 30, 1895 (Field); *Heller* (similarly) 2,783 (type, Gray: cotypes, Arn.; Berl.; Field; Kew; Minn.; Mo.; N.Y.; Par.; U.S.); *Joseph F. Rock* 5,817, in woods above Makaweli, September, 1909 (Gray).

An interesting character is the leafiness of the peduncles, at least of those bearing the fertile flowers. At times these peduncles are definitely terminal, but in most cases they are axillary. In these latter cases, however, the leaves along the lower part may give the remaining terminal portion of the peduncle the appearance of being terminally placed on a leafy branch.

Heller misconstrued this species as representing *P. acuminatum*. From that species it may be separated at once by its leafy, not minutely subulate-bracted, peduncles, by the very minutely spreading-hispidulous, not tomentulose or glabrate, pedicels of the fertile flowers, and by the finally glabrate, not tomentose, capsules; also doubtless by several other characters yet to be ascertained when flowering specimens of both sexes are collected.

3. **Pittosporum glabrum** Hook. & Arn. Bot. Beech. Voy. 110. 1832; *Pittosporum Terminalioides* var. *glabrum* Hook. & Arn. *ex* Wawra, Flora 56: 168. 1873; *Pittosporum Fauriei* Lévl. *in* Fedde, Repert. 10: 121. 1911.

a. Leaves glabrous.

  b. Peduncle and pedicels usually glabrous; capsules up to about 2.5 cm. long, essentially glabrous . . . *P. glabrum* sensu stricto.

b. Peduncles and pedicels pilose.

c. Pedicels much reduced, only ±1 mm. long. var. δ *glomeratum.*

c. Pedicels commonly much longer.

d. Hairs of pubescence multiloculate; capsules up to 3.5 cm. long, glabrous or slightly tomentulose. . var. γ *intermedium.*

d. Hairs of pubescence simple; capsules up to 2.7 cm. long, irregularly tomentulose. . var. β *spathulatum* sensu stricto.

a. Leaves with more or less pubescence unless when old.

b. Leaf-blades somewhat appressed-tomentose beneath with commonly white or but rarely yellowish-brown hairs.

c. Leaves coriaceous, capsules whitish- or yellowish-tomentulose and ±2.5 cm. wide; plant native of Molokai. var. β *spathulatum* f. 1. *subcandidum.*

c. Leaves membranaceous, capsules glabrate or very sparsely setose and ±1.7 cm. wide; plant native of East Maui. var. ε *Tinifolium.*

b. Leaf-blades having mostly yellow tomentum; plant native of Oahu.................... var. β *spathulatum* f. 2. *hypoleium.*

A shrub or small tree, 2–5 meters tall, glabrous throughout or somewhat pubescent on young shoots and rarely on floral bracts; branches with grayish bark. Leaves on slender branches, a few alternate the rest loosely verticillate, thin-coriaceous, spatulate to oblanceolate or rarely ovate-oblong, at apex rarely subtruncate or faintly emarginate but commonly rounded to obtuse or shortly acuminate, at margins very narrowly and only moderately revolute, gradually narrowed below into a subalate or alate petiole (this 0.5–1.5 or even –2 cm. long), the blade now 5–9 cm. long and 1.5–3 cm. wide now 9–13 cm. long and 2.5–3.8 cm. wide, drying to various shades of green (bluish- or grayish- to brownish-green) on upper surface and often to a paler- or more brownish-green on lower surface, the venation not or but slightly salient. Inflorescence usually quite glabrous, in axillary or terminal normal or subcorymbose sometimes subpedunculate but usually pedunculate racemes, these 6–15- (more rarely to 20-) flowered. Pedicels glabrous or glabrate, slender or sometimes even capillary, commonly 3–8 rarely up to 18 mm. long; their bracts subulate to linear-oblong or more often -lanceolate, glabrous or ciliate, mostly 1–3 mm. long; peduncle ±2 cm. long. Sepals ovate, obtuse to acuminate, glabrous, 1–1.5 (rarely –3) mm. long. Corolla pure white or cream-colored, its tube ±7 mm.

long in the fertile flowers and ±9 mm. long in the sterile flowers, the spreading lobes about 4–4.5 mm. long. Ovary glabrous. Capsule 2- or 3-valved, at first ovoid and pointed, smooth or roughish; at maturity green or greenish (but brownish to black in herbarium specimens), usually compressed-globose rarely compressed-ovoid, externally papillate and often transversely somewhat waved or wrinkled; after dehiscence the valves more or less flat, up to about 2.5 cm. long and subequally wide. Seeds black, shining, compressed, angular, dorsally smooth, 4–6 mm. wide.

Type specimen: Collected by *Lay & Collie* (of Captain Beechey's Expedition) on Oahu, 1826–1827 (Kew; a specimen in Delessert Herbarium, apparently intended for a duplicate, is seen from its one small immature capsule to be *P. sulcatum*).

Distribution: Island of Oahu.

Specimens examined: *Captain Beechey*, see *Lay & Collie*; *Edwin H. Bryan, Jr.*, Koolau Range, December, 1919 (Field); *Bryan*, alt. ±1,500 feet, Kawailoa Ridge, January 5, 1937 (Field); *Bryan* 790, small tree 4–5 meters tall, in small clump of remnant native forest, alt. 1,800 feet, extreme head of Manini Gulch, Waianae Mts., September 25, 1934 (Field); *William Bush & D. LeRoy Topping* 3,718, shrub 5–6 feet tall, on sunny bank, Waimalu Gulch, February 22, 1934 (Field); *Bush & Topping* 3,766, tree 15 feet tall, on shrubby hillside, Waimalu Ditch Trail, November 18, 1934 (Deg.; Gray; N.Y.; U.S.); *I. Chang*, in rain-forest, alt. 1,700 feet, south ridge of Kipapa Gulch, Waipio, Koolau Mts., May 15, 1932 (Field); *Degener* 10,976, in forest, Mt. Olympus, January 9, 1927 (Berl.; Deg.; Field); *Degener* 10,982, weak, somewhat straggling shrub, 6 feet tall, in forest, east ridge of Niu Valley, April 20, 1931 (Berl.; Deg.; Field, 2 sheets); *Degener* 13,001, in forest, Oio-Paumalu Trail, June 16, 1940 (Berl.; Deg.; Field, 2 sheets; form with some of the ovaries subrugose and when very young somewhat hispid, the pedicels at first glabrate or sparsely short-setulose); *Degener & H. Ochiae* 10,988, on exposed ridge in tapestry forest, ridge northeast of Nuuanu Pali, November 20, 1926 (Field); *Degener, Park, Potter, & Shigeura* 10,812, on lantana-covered foothill, Waimalu Gulch, November 3, 1935 (Deg.; N.Y.); *Degener, Park, & Kwon* 10,980, straggling shrub, with curving, weak branches, in rain-forest, Pupukea-Kahuku region, December 6, 1931 (Berl.; Deg.; Field, 2 sheets); *Degener, Salucop, & Arlantico* 11,535 *pro parte*, in lower forest, C. C. C. Trail, Aiea, December 6, 1937 (Field, 2 sheets; N.Y.; some of the capsules rugose and suggesting possible hybridization with

P. sulcatum); *Degener, Takamoto, & Martinez* 10,799 *pro parte*, in forest, C.C.C. Trail, Aiea, March 15, 1936 (Deg.); *Degener, Takamoto, Tam, & Martinez* 10,798 *pro parte*, in lower forest, east ridge of Manoa Valley, March 29, 1936 (Corn.; Deg.; Gray; Mo.; N.Y.; U.S.; *cum P. acutisepalo commixta*); *Miss K. Duker*, in wet forest, Manoa Cliff Trail, Manoa Valley, July 13, 1933 (Field); *Abbé Urbain Faurie* 4, alt. 600 meters, Kalihi, October, 1909 (Arn.; Del.; Par.); *Faurie* 5, alt. 800 meters, Konahuanui, May, 1910 (Arn.; Del.; Par.); *Faurie* 18, Kalihi, October, 1909 (Bish.; Del.; Léveillé's first cited number of his *Pittosporum Fauriei*); *Faurie* 38, same place and date (Par.; cited by Léveillé for his *P. Fauriei;* reduced *in herb.* by Joseph F. Rock to *P. glabrum*); *Charles N. Forbes* (with *J. F. G. Stokes*), Lanihuli Ridge, June 28, 1908 (Field); *Forbes*, west side of Nuuanu Valley above Pali, July 25, 1908 (Bish.); *Forbes*, ridge, west Kalihi Valley, August 18, 1908 (Field); *Forbes*, ridge, west of Kalihi Valley, December 24, 1908 (Field); *Forbes*, head of Kalihi Valley, April 2, 1909 (Field; Mo.); *Forbes* 1,080-*O*, valley and ridge, Nuuanu, January 27, 1909 (Bish.); *Forbes* 1,251-*O*, head of Kalihi Valley, April 2, 1909 (Bish.); *Forbes* (with *C. M. Cooke*) 1,610-*O*, east side of Nuuanu Valley, November, 1910 (Bish.; Mo.); *Forbes* 1,661-*O*, Pacific Heights, March, 1911 (Mo.); *Forbes* 1,898-*O*, central ridge of Niu, February 9, 1914 (Bish.); *Forbes* 1,943-*O*, ridge west of Waialae Valley, October 15, 1914 (Berl.; Bish.; Field; Mo.); *Forbes* 2,058-*O*, ridge north of Waimea Valley, February 10–13, 1915 (Bish.; Field); *Forbes* 2,181-*O*, Konahuanui ridges, March 11 and 12, 1915 (Bish.); *Forbes* (with *Mr. Labouchere*) 2,289-*O*, in upper Kalihi Valley, February 16, 1916 (Bish.; Field); *Forbes* (with *Albert S.* and *Ralph Hitchcock*) 2,399-*O*, on ridge between Palolo and Waialae, August 7, 1916 (Bish.); *Forbes* (with *J. C. Bridwell*) 2,432-*O*, Waialae Iki and Ridge, right-hand side, March 2, 1917 (Bish.); *Forbes* (with *J. C. Bridwell*) 2,459-*O*, ridge between Niu and Wailupe, April 11, 1917 (Bish.); *Forbes* 2,493-*O*, Manoa Cliff Trail, May 1, 1917 (Bish.); *F. R. Fosberg* 9,303, bush 2 meters tall, flowers white, with strong, sweet odor, on dry bluff, alt. 300 meters, ridge above Woodlawn, Manoa, March 19, 1933 (Berl.; Bish.; Del.; Field; Mo.; Par.); *Fosberg* 13,317, small tree 5 meters tall, in moist patch of forest, alt. 520 meters, at head of Keekee Gulch, Kuaokala Forest Reserve, Waianae Mts., November 8, 1936 (Bish.; Field); *Fosberg & K. Duker* 9,184, tree 4 meters tall, in wet forest, alt. 520 meters, Pupukea-Kahuku Trail, Koolau Mts., Kaunala, February 19, 1933 (Berl.; Bish.; Field); *V. O. Fosberg* 25, bush 3 meters tall, with white flowers, in wet forest, alt. 580 meters, Palolo-Waialae Ridge, Koolau Mts., May 24, 1936

(Berl.; Bish.; Field, 2 sheets); *D. Wesley Garber & C. N. Forbes* 186, ridge overlooking Niu and Wailupe Valleys, January 12, 1920 (Bish.); *A. A. Heller* 1,985 *pro parte,* Honolulu, March 22, 1895 (Corn.); *Heller* (similarly) 1,985 *pro parte,* in Nuuanu, March 23, 1895 (Field; Gray; N.Y.; Par.; U.S.); *William Hillebrand,* Oahu, 1869 (U.S.); *Hillebrand* 301, Oahu (Gray); *Hillebrand* 303, Oahu (Kew); *Hillebrand & Lydgate,* Oahu (Bish.); *E. P. Hume* 344, alt. 1,800 feet, on wooded slope, Manoa Cliff Trail, November 28, 1931 (Bish.; Field); *A. F. Judd* 26, flowers white, Kalihi region, November 4, 1925 (Bish.); *N. H. Krauss,* in wet forest, alt. 1,500–1,700 feet, Pupukea-Kahuku Trail, Kaunala-Waimea, Koolau Mts., February 19, 1933 (Berl.; Bish.; Field); *Krauss,* alt. 1,400–1,600 feet, Piko Trail, Kahanahaiki Valley, Waianae Mts., December 30, 1933 (Field); *Lay & Collie,* Oahu (type, Kew); *Horace Mann & William T. Brigham* 203 *pro parte,* Oahu (Bish.; Del.; Field, 2 sheets; Gray; *in* Kew, Mo., *alibique cum P. sulcato* var. *Remyi commixt.;* N.Y.; U.S.); *Jules Remy* 571, Oahu, 1851–1855 (Par.); *Joseph F. Rock,* without locality, October 3, 1908 (Bish.); *Rock* 19 (4,812), alt. 1,200 feet, east ridge, Niu Valley, August 22, 1909 (Bish.); *Rock* 710 *pro parte,* Pauoa Valley, November 4, 1908 (Field); *Rock* 990, Konahuanui, January 7, 1909 (Arn.); *Rock* 4,836, alt. 1,000–1,200 feet, slopes of eastern ridge, Niu Valley, August 22, 1909 (Bish.; Gray); *Rock* 4,839, alt. 1,000 feet, on the slopes of the eastern ridge, Niu Valley, August 22, 1909 (Arn.); *Rock* 8,721, alt. 2,000 feet, Niu Valley, December, 1910 (Arn.; Bish.; Gray; N.Y.); *Carl Skottsberg* 2,109, Pupukea-Malaekahana Trail, Koolau Range, September 15, 1926 (Bish.); *D. LeRoy Topping* 2,851, Niu Ridge, September 7, 1924 (Deg.; N.Y.); *Topping* 3,096, along Manoa Cliff Trail, April 12, 1925 (Deg.); *United States Exploring Expedition under Captain Wilkes,* Oahu (Gray; U.S.); *E. K. Yoshinaga, Pupukea,* January 12, 1930 (Bish.).

Much material of related species has been confused with *P. glabrum,* both in literature and in herbaria. Thus, for example, J. F. Rock (Indig. Trees Haw. Isls. pl. 55. 1913) illustrates the species with a full-page plate of what is instantly recognizable as *P. sulcatum* var. *Remyi.* A. A. Heller collected many specimens of *P. glabrum* in southeastern Oahu in 1895, distributing them under his number 1985. But under this same number he included certain additional specimens that prove to be *P. sulcatum.* These latter are at least in large part and doubtless entirely the basis of Heller's remarks (Minnesota Bot. Studies 1: 829. 1897): "In flowering specimens, collected on the lower slope of Konahuanui, and overlooking Nuuanu, the pedicels are pubescent. With the exception of this pubescence, which apparently soon disappears, the specimens agree very well with the original description of *P. glabrum.*" (But the original description of *P. glabrum* was all too meager. A comparison with actual specimens of *P. glabrum* shows, for Heller's atypic specimens, not only pubescent pedicels but the proportionately longer sepals and the rugose fruits characteristic of *P. sulcatum.*) Aloysius Putterlick likewise was inaccurate in his treatment of *P. glabrum* (Synopsis Pittosporearum 11. 1839). For the binomial he cited its real authors, Hooker and Arnott, to be sure, but he based his description upon a plant collected by David Douglas, and a study of this description shows that Putterlick's plant was *P. Terminalioides.*[1]

Hillebrand (Fl. Haw. Isls. 22. 1888) set *P. glabrum* in that division of his key where the inflorescence was "axillary or cauline," not in part "terminal." But *P. glabrum* varies indiscriminately in this respect and its frequent terminal inflorescences may bear either fertile or sterile flowers. Indeed, on the type sheet at Kew, the right-hand one of the two specimens shows a terminal inflorescence.

Rock (*loc. cit.*), who evidently relied very largely upon Hillebrand, likewise classified *P. glabrum's* inflorescence as "axillary or cauline." E. Pritzel (*in* Engler & Prantl, Nat. Pflanzenfam. ed. 2. 18*a:* 278. 1930) accepted Rock's key bodily, merely translating it from English into German. We must note, however, that when Rock, subsequent to the publication of his key in 1913, made an extended herbarium study of Berlin and Paris specimens of *Pittosporum,* he included terminal as well as lateral inflorescences for *P. glabrum.* One instance was his reduction of the Paris specimen of Faurie 38, a number cited by Léveillé for *P. Fauriei* Lévl., to *P. glabrum.* On that specimen and several others cited by Léveillé for *P. Fauriei* Lévl., the inflorescences are distinctly terminal.

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[1] Putterlick indeed cited a plant which "in insula Sandwicensium Oahu legit D. Douglas." But I know of no Oahu plants that Douglas collected. Horace Mann (Jr., Enum. Haw. Pl., Proc. Amer. Acad. 7: 144. 1867) states that when Douglas reached the Hawaiian Islands, "he immediately went to Hawaii, where he collected until the 12th of May, when he met a violent death . . . ." The only *Pittosporum* material seen by me that Douglas collected is his no. 20 at Kew and at Gray Herbarium. This is the type collection of *P. Terminalioides* Planchon *ex* A. Gray. The island whence it derived is not stated on the label, but the Kew label says "Sandwich Islands." The Gray Herbarium specimen had been labeled *P. Terminalioides* in Gray's own hand and, since Gray elsewhere (Bot. United States Explor. Exped. 1: 231. 1854) cited the one island, Hawaii, for that species and, furthermore, was familiar with and cited Putterlick's description of *P. glabrum,* it is evident that Gray did not give credence to Putterlick's citation of "Oahu" for the true source of the Douglas plant. (As to the quite different question, as to whether true *P. Terminalioides* is found on the Island of Oahu, see footnote under that species, p. 516.)

The precise status of *P. Fauriei* merits discussion here, inasmuch as its name antedates various others published at later dates for Hawaiian *Pittospora*. Léveillé's description (*loc. cit.*) included: "... folia oblongo-spathulata glaberrima in petiolum decurrentia; flores terminalia 4–6, umbellati conspicue pedunculati et pedicellati; corolla calice 4-plo longior; rachide glaberrima qua a *P. insigne* cui proximum distinguitur; sepala ovata, glaberrima, obtusa, petala obtusa; ovarium pilosum stylo crasso et dimidio longiore coronatum; fructus niger, levis, piriformis, stylo marcescente." Faurie 18 and 38 were cited, both from Kalihi (misspelled "Kaliki" by Léveillé but not by Faurie), Oahu, October, 1909. The type herbarium was not cited.[1] The Bishop Museum specimen of Faurie 18, the first cited number, is the only one known to me labeled fully in Léveillé's own hand. This, however, is barely a fragment and it is obvious that he really used associate specimens, doubtless the ones at Delessert Herbarium and at Paris, for his description. These latter two match the description closely. From the glabrous leaves and inflorescence, the very short calyces, and the glabrous fruits, they are seen to belong to *P. glabrum*. The word "piriformis" evidently referred to the lone submature capsule on the Paris sheet of material. The Delessert sheet bears four submature capsules and these all are ovate or obovate to cordate-ovate in outline as they lie pressed on the paper. All five capsules are essentially smooth or erugose (*cf.* "levis" Lévl. *loc. cit.*), as in *P. glabrum* proper, but show somewhat a tendency to have the flattish surface sulcate or sulculate. *P. glabrum* occasionally presents capsules of this type, thus offering a slight approach (as to capsules only) toward *P. sulcatum*.[2] Whether this approach connotes hybridism is not known, but in no case could the type materials of *P. Fauriei* be taken as typifying the sister species, *P. sulcatum*, and thus compelling us to supplant the name *sulcatum* with the earlier name *P. Fauriei.*

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[1] The Faurie plants were disposed of to several large institutions (among them the Arnold Arboretum, the Bernice P. Bishop Museum, the British Museum of Natural History, the Delessert Herbarium, the Royal Botanical Garden of Edinburgh, and the Museum of Natural History at Paris), and hence the actual types of Léveillé's numerous "new species" (which in the case of the Hawaiian flora he founded on Faurie's plants and most of which have since been reduced by other workers to synonymy) came to rest in widely scattered herbaria. In the genera studied by me for the Hawaiian Islands so far (*Bidens* L., *Dubautia* Gaud., *Euphorbia* L., *Haplostachys* [A. Gray] Hillebr., *Labordia* Gaud., *Lipochaeta* DC., *Phyllostegia* Benth., *Pittosporum* Banks, *Raillardia* Gaud., *Stenogyne* Benth., and *Tetramolopium* Nees von Esenb.) Léveillé's personally labeled specimens were mostly at Paris, but occasionally at Bishop Museum and at Delessert Herbarium. For many groups, however, the actual types are said to be elsewhere, notably at Edinburgh.

[2] The ovaries, described as pilose by Léveillé, are glabrous except for a few hairs that seem to be merely portions of fungous hyphae.

Pittosporum glabrum var. β **spathulatum** (Mann) Sherff, Amer. Journ. Bot. 28: 25. 1941; *Pittosporum Terminalioides* var. γ Gray, Bot. U. S. Explor. Exped. 231. 1854 (as to Oahu material); *Pittosporum spathulatum* Mann, Enum. Haw. Pl. No. 20 (Proc. Amer. Acad. 7: 151). 1867; *Pittosporum Terminalioides* var. *spathulatum* Gray *ex* Wawra, Flora 56: 169. 1873; *Pittosporum glabrum* var. β Hillebr. Fl. Haw. Isls. 23. 1888.

Leaves similar but usually a trifle more reticulate- and depressed-veiny on upper surface, and somewhat more salient-veiny underneath (the midvein often noticeably so). Peduncle short or long (up to 3 or rarely to 9 cm.), commonly cernuous, this and the pedicels (4–13 mm. long) densely or sometimes sparsely pilose. Sepals 2–3 mm. long, pubescent or finally glabrate. Ovary tomentose, the tomentum mostly persistent in irregular areas upon the mature, sometimes slightly larger capsule, this yellowish or yellow and up to about 2.7 cm. long.

Type specimen: Collected by *Horace Mann & William T. Brigham*, No. 602, on Kaala Mountains, Waianae Range, Oahu, May, 1864–May, 1865 (herbarium not cited). As may be seen from Mann's description of the stamens, "staminibus petalis plus dimidio brevioribus," he had before him only pistillate flowers. A large, numerously flowering spray of staminate material (Herb. Corn.) had been collected by him, however, and had been erroneously construed by him as *P. glabrum.* On the same sheet with this spray (at the lower right), and likewise construed, is a smaller, fruiting specimen of *P. sulcatum* var. *Remyi*, the evident source of Mann's description, "capsula globosa tuberculato-rugosa," for the fruit of *P. glabrum.*[1]

Distribution: Islands of Molokai and Oahu.

Specimens examined: Molokai.—*C. N. Forbes* 73-*Mo*, Kalae, June, 1912 (Field); *Forbes* 429-*Mo*, Pukoo Ridge, August, 1912 (Berl.; Bish.; Field; Gray); *Forbes* 569-*Mo*, Wailau Trail, September, 1912 (Bish.; Field); *William Hillebrand*, Kalae, 1870 (Gray; Kew); *H. St. John, J. Dunn, & Wm. Storey* 13,267, tree, 18 feet tall, in moist woods, alt. 2,200 feet, Kukuinui Ridge, Wailau Valley, July 4, 1933 (Field).

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[1] The Mann & Brigham 203 sheet at Kew similarly bears (at upper left) a spray of *P. sulcatum* var. *Remyi*, but has commixed (at upper right) a subflowering specimen of true *P. glabrum.*

Oahu.—*Erling Christophersen, G. P. Wilder, & E. Hume* 1,492, in open forest, alt. 300–500 meters, at head of Kalihi Valley, January 25, 1931 (Field); *Otto Degener & Kwan Kee Park* 11,001, in forest, southeast side of Makua Valley near its head, January 31, 1932 (Field); *C. N. Forbes*, Makaha Valley, February 12–19, 1909 (Bish.; Field); *Forbes* 1,676-*O*, Palehua, Waianae Range, April 1–4, 1911 (Field; Mo., 2 sheets); *Forbes* (with *Mr. Labouchere*) 2,316-*O*, on ridge at left side of Kalihi Valley, March 9, 1916 (Bish.); *Francis Raymond Fosberg* 9,460, slender tree 5 meters tall, fruit yellow, aril dark brown, in wet forest, alt. 530 meters, Kalauao-Waimalu Ridge, Koolau Mts., April 30, 1933 (Bish.; Field); *Fosberg & Miss Katherine Duker* 9,070, bush 2.5 meters tall, fruit yellow, on bare, dry ridge, alt. 480 meters, Makua, Waianae Mts., November 25, 1932 (Field); *William Hillebrand*, Hawaiian Islands (U.S., 2 sheets); *Hillebrand & Rev. John M. Lydgate*, Oahu (Bish.); *E. Y. Hosaka* 629, alt. 1,700 feet, on moist, wooded slope, south ridge, Kipapa Gulch, Waipio, Koolau Range, July 4, 1932 (Field); *Hosaka* 699, alt. 2,000 feet, on wooded south ridge, Kipapa Gulch, Waipio, September 18, 1932 (Field); *Hosaka* 959, tree 15–20 feet tall, alt. 1,800 feet, on wooded south ridge, Kipapa Gulch, April 2, 1933 (Bish.; Field); *A. F. Judd* 25, Kaalakei (*i.e.*, Keawaawa), Maunalua district, February 13, 1928 (Bish.); *N. H. Krauss*, alt. 1,200–1,300 feet, Makua Valley, Keaau-Makua Forest Reservation, Waianae Mts., November 25, 1932 (Bish.); *Horace Mann & William T. Brigham* 203 *pro parte*, Oahu (Corn., *cum P. sulcato var. Remyi commixt.*); *Mann & Brigham* 602, Kaala Mts. (Corn.; Gray; Mo.; U.S.); *Jules Remy* 572 *pro parte*, Oahu, 1851–1855 (Gray; Par.); *Rock, Swezey, Bridwell, & Timberlake*, right-hand branch of Wailupe Valley, April 14, 1918 (Berl.; Bish.; Field); *Amy Suehiro*, Laie Ridge, Koolau Range, February 14, 1932 (Bish.); *D. LeRoy Topping* 2,890, Niu Ridge, October 3, 1924 (Deg.); *United States South Pacific Exploring Expedition under Captain Wilkes*, Oahu, 1840 (Gray); *M. Yamaguchi* 1,249, alt. 1,750 feet, south ridge, Kipapa Gulch, Koolau Range, July 4, 1932 (Field).

According to Hillebrand (Fl. Haw. Isls. 23. 1888), a form similar to this variety but "with acuter and more tomentose sepals is common on Molokai." It is very likely that at least some of the material which he had in mind belonged to *P. sulcatum* or its variety *Remyi* or to *P. insigne* var. *Hillebrandii*, all of which occur on Molokai. The var. *spathulatum* seems comparatively rare on Molokai, being known to me from that island only through the two collections of fruiting material obtained by Forbes (Nos. 429-*Mo* and 569-*Mo*) in eastern Molokai, the single collection of atypic fruiting and scantily flowering material obtained by Hillebrand at Kalae in northern central Molokai, and the fairly typical specimen by St. John *et al.* (No. 13,267) from eastern Molokai.

The fresh, mature capsules are described by Fosberg and by Fosberg & Duker as yellow, whereas the comparable ones for the species proper are described as green or greenish. For further mention of this variety, see under *Pittosporum sulcatum.*

Pittosporum glabrum var. *β* **spathulatum** f. 1. **subcandidum** Sherff, Field Mus. Bot. Ser. 22: 411. 1941.

Foliar blades clothed irregularly and sparsely on lower surface (petioles and young shoots densely) with appressed and commonly white (rarely yellowish-brown) tomentum, or finally glabrate.

Type specimen: Collected by *Francis Raymond Fosberg,* No. 13,402, tree, 5 meters tall, at edge of moist forest, alt. 600 meters, Manawai-Kahananui Ridge, Molokai, December 24, 1936 (Field, 2 sheets).

Distribution: Southeasternmost Molokai.

Specimens examined: *Fosberg* 13,402 (type, Field, 2 sheets: cotypes, Berl.; Bish.).

The type specimens lack flowers but have a total of ten mature fruits. These are identical with those of var. *spathulatum* proper found on Oahu (type locality for that variety) and the only distinctive character remaining appears to be that of the tomentum on the youngest shoots, on the under surfaces of the leaves, and on the petioles when young. The leaves and youngest shoots of var. *spathulatum* proper are regularly glabrous.

Pittosporum glabrum var. *β* **spathulatum** f. 2. **hypoleium** Deg. & Sherff *ex* Sherff, *loc. cit.*

Similar to f. *subcandidum* but the pubescence for the most part yellow. On the type the pubescence is accompanied by considerable pulverulence but this appears to be foreign.

Type specimen: Collected by *Otto Degener & H. Ochiae,* No. 10,988*a,* on exposed ridge in tapestry forest, ridge northeast of Nuuanu Pali, Oahu, November 20, 1926 (Field).

Distribution: Southeastern Oahu.

Specimens examined: *Degener & Ochiae* 10,988*a* (type, Field).

The large spray of the type sheet lacks flowers but is accompanied by a mature capsule, this in a separate packet.

Pittosporum glabrum var. γ **intermedium** Sherff, Field Mus. Bot. Ser. 22: 410. 1941.

Inflorescence cauline or axillary, conspicuously spreading-pilose with brown multiloculate and minutely glandular-capitate hairs, the staminate ±9-flowered, its short peduncle under 6 mm. long, the slender pedicels under 8 mm. long, their bracts subulate and under 3 mm. long, the subulate-lanceolate sepals dorsally glabrescent and 4 5 mm. long; pistillate inflorescence up to 14-flowered, peduncle finally up to 1.2 cm. long, pedicels thickish and shorter, the broader sepals ovate-attenuate and more pubescent. Capsules glabrous or weakly and irregularly tomentulose, their valves up to 3.5 cm. long and 2.9 cm. wide. Seeds up to 7 mm. long, 5 mm. wide, 4 mm. thick.

Type specimen: Collected by *Charles N. Forbes*, No. 1,676-*O*, Palehua, Waianae Range, Island of Oahu, April 1–4, 1911 (Bish.).

Distribution: Known only from southwestern Oahu.

Specimens examined: *J. C. Bridwell*, Oahu, 1917 (Bish., 2 sheets); *Forbes* 1,457-*O*, on ridges behind Pearl City, February 24, 1910 (Mo.); *Forbes* 1,676-*O* (type, Bish.: cotypes, Berl.; Field).

The pilose inflorescence distinguishes this variety from the species proper and somewhat suggests var. *spathulatum*, but the multiloculate and glandular nature of the hairs, also the more attenuate sepal-tips and larger, more nearly or even completely glabrous capsules offer a distinction from that variety.

Pittosporum glabrum var. δ **glomeratum** (Hillebr.) Sherff; *Pittosporum glomeratum* Hillebr. Fl. Haw. Isls. 23. 1888.

A small tree with slender, virgate branches, young shoots cinereous-pubescent. Leaves elongate-spatulate, at apex obtuse or barely acuminate, gradually narrowed from terminal fifth or sixth into a slender petiole (this 2–4.5 cm. long), blade up to 1.7 dm. long and to 3 cm. wide, chartaceous, glabrous. Peduncles axillary, bracteate, pubescent, 2.5–3.7 cm. long, with a dense cluster of almost sessile flowers at the apex, the lanceolate bracts 3-6 mm. long. Sepals ovate, obtuse, tomentose, 2–2.5 mm. long. Corolla white, its tube ±10 mm. long. Ovary tomentose. Fertile flowers on shorter peduncles. Capsule and seeds as in *P. glabrum* proper but seeds 8 mm. broad.

Type specimen: Collected by *William Hillebrand*, at Wailupe, Isl. Oahu, 1870 (Berl.).

Distribution: Known only from type locality in extreme southeastern Oahu.

Specimens examined: *Hillebrand*, Wailupe, 1870 (type, Berl.; studied through the fine and detailed photograph courteously presented to me by Dr. Ludwig Diels, Director of the Berlin Botanical Garden).

An extended search through herbarium material reveals no specimens matching Hillebrand's type. Rock, who had not as yet seen the type specimen, wrote (Indig. Trees Haw. Isls. 157. 1913) that *P. glomeratum* Hillebr. "comes very close to *P. glabrum* and is perhaps only a form of it." At Berlin the type sheet had been marked "bearbeitet für das 'Pflanzenreich'" by Moeser and the name *glomeratum* reduced to the rank of a mere *forma* under *P. glabrum.* On a different sheet, the sheet designated by me as "B" (see under *P. acutisepalum*, p. 499), Rock had later written (as translated by me from a photograph sent me by Dr. Diels): "I agree entirely with L. Moeser, *Pittosporum glomeratum* is in any case only a form of *P. glabrum.*" My own judgment is that *P. glomeratum* is *specifically* affiliated, to be sure, with *P. glabrum* but is entitled to varietal rank under that species. Distinguishing characters are: the pedunculate *cluster of almost sessile* flowers, *pubescent* peduncle, tomentose sepals and ovary, etc.

Pittosporum glabrum var. ε **Tinifolium** Sherff, Field Mus. Bot. Ser. 22: 412. 1941.

Branches glabrate, not robust (less than 5 mm. thick on specimens seen). Leaves disposed toward tips of branches, youngest ones very pubescent but soon glabrous or on lower surface sparsely scurfy-setose, slenderly petiolate, petiole 0.5–2 cm. long; blade oblanceolate or oblongly elliptic-lanceolate, acuminate, membranaceous, subobscurely nerved, 6–11 cm. long and 2–3.3 cm. wide. Flowers unknown. Inflorescence (fructiferous) cauline, subsessile, capsules ±5. Capsule pedicellate, pedicel 4–10 mm. long; valves finally flat and more or less rounded, under 2 cm. long and 1.8 cm. wide, externally glabrate or very sparsely setose but (at least when dry) minutely rugose (under a lens appearing much convoluted), beak about 1.5 mm. long. Seeds black, more or less flat, angulate, glabrous and smoothish on faces.

Type specimen: Collected by *Charles Noyes Forbes*, No. 1,668-*M*, on ridge at side of Kipahulu, East Maui, November 17, 1917 (Bish.).

Distribution: Known only from type locality in southeasternmost East Maui.

Specimens examined: *Forbes* 1,668-*M* (type, Bish.: cotypes, Berl.; Field).

4. **Pittosporum acutisepalum** (Hillebr.) Sherff, Field Mus. Bot. Ser. 22: 409. 1941; *Pittosporum glomeratum* var. *acutisepalum* Hillebr. Fl. Haw. Isls. 23. 1888.

Small tree, doubtless close to *P. glabrum* in general appearance. Leaves as in that species, except appressed-setose beneath when young, a few of the setae usually persisting till leaves reach nearly full size. Inflorescence terminal or lateral. Sterile flowers clustered at ends of short or long bracteate peduncles, sepals (narrowly lanceolate, ±4 mm. long) and bracts (filiform-subulate, 4–7 mm. long) dorsally whitish- or tawny-strigose with erect and few to many setae; peduncle (up to ±5 cm. long) and pedicels (usually 2–5 mm. long) similarly but more densely strigose; fertile flowers similar but few, often single in the axils, their pedicels more often on reduced peduncles (these as short as 1 mm.). Mature capsules unknown.

Type specimen: Hillebrand (*loc. cit.*) cited "Palolo to Niu" at the "eastern end of Oahu" as the type locality. There are two sheets of material in the Hillebrand set at Berlin, and through the courtesy of Dr. Ludwig Diels, Director of the Berlin Botanical Garden, photographs of these are now before me. One (referred to below as "A") bears merely "Oahu" for the type habitat, but the other (referred to below as "B") has "Niu" upon the label.

Distribution: Southeastern Oahu.

Specimens examined: *Erling Christophersen & Gerrit P. Wilder* 1,429 *pro parte*, in moist place, alt. 500–600 meters, East Palolo ridge, January 16, 1931 (Berl.; Bish.; Field, 2 sheets; a form with sepals often only 5 mm. but petals ±17 mm. long, entirely separate, and very slender; the flowering specimens of this set originally commixed by the collectors with mature fruiting specimens of *P. sulcatum*); *Otto Degener* 10,975, in rain-forest, Mt. Olympus, January 9, 1927 (Berl.; Deg.; Field); *Degener & Kwan Kee Park* 10,983, in forest, Wilhelmina Rise, November 11, 1931 (Berl.; Field); *Degener, Takamoto, Tam, & Martinez* 10,798 *pro parte*, in lower forest, east ridge of Manoa Valley, March 29, 1936 (Corn.; Del.; Mo.; *cum P. glabro commixta*); *J. Arthur Harris* C242,243 *pro parte*, Oahu, September 10, 1924 (Goth.); *Hillebrand*, Nuuanu (Kew).

Hillebrand (*loc. cit.*) correctly described the ovary of *P. glabrum* as glabrous. He omitted describing *P. glabrum's* mature capsules as glabrous, since among Hawaiian *Pittospora* glabrous ovaries never produce anything but glabrous capsules. In describing his new species *P. glomeratum* he gave the ovary as tomentose, but described the capsule as being the same "as in no. 2," *i.e.*, his *P. glabrum.* Thus, with Hillebrand, his own *P. glomeratum* was understood as having a tomentose ovary but a glabrous capsule. Still more, since its capsules were as in *P. glabrum,* they would be of the erugose, not rugose, kind.

In describing his *P. glomeratum* var. *acutisepalum*[1] he pointed out several differences but omitted all mention of the ovary and capsule. It is fair to assume that these were as in *P. glomeratum* proper, especially so since sheet "B" has at least two ovaries present and sheet "A" has at least two young capsules (about 1.2 cm. long) present, and Hillebrand thus had opportunity to make comparisons. It is impossible to be certain from the photographs whether the ovaries are indeed pubescent and the capsules finally glabrous, hence these questions must be left until fruiting material can be studied. However, the two young capsules visible in the photograph of sheet "A" are seen to be of the erugose type as in *P. glabrum* rather than of the rugose type as, for example, in *P. sulcatum.*[2]

As to the fruiting specimens so far available in herbaria, they all, so far as observed, are open to suspicion and must be rejected. Thus, for example, Degener *et al.* 10,798 was issued as pairs of specimens. In each case the flowering specimen was typical of *P. glabrum.* There were no interconnecting specimens whatever. In the case of Christophersen & Wilder 1,429, two collections were made, likewise without transitional or intermediate stages to connect the two, under the same number. But here, while the flowering specimens were typical of *P. acutisepalum*, the fruiting ones were typical for *P. sulcatum* var. *Remyi*. It is to be hoped that several more collections will be made, but this time each from a single tree, the same tree being visited on different dates if necessary to secure both flowering and fruiting stages.

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[1] Spelled *acutisepala* by Hillebrand in his posthumously published Flora. I assume that he inadvertently used the feminine ending *a* in his mss. to accord with an understood "*varietas*" rather than to connote a substantive-plural use of the word. (Cf. his *Tetramolopium Chamissonis* var. *arbuscula* on p. 199, *T. arenarium* var. *dentata* on p. 200, and *Claoxylon sandwicense* var. *tomentosa* on p. 399 of the same work. In these last two cases he of course could not have intended a substantive use. In the case of the somewhat comparable *Panicum monticola,* published by him on pp. 494 and 500, it seems entirely possible that he was in fact thinking in terms of a substantive.)

[2] Both "A" and "B" sheets bear labels entitled, "Bearbeitet für das 'Pflanzenreich' " and determinations by Moeser in which the var. *acutisepalum* Hillebr. was synonymized with a *forma* of *P. glabrum.* Sheet "B" bears an extended comment by J. F. Rock in which he voices his substantial agreement with Moeser's treatment.

While further collections are desirable to reveal the capsular characters more definitely, we cannot ignore the fact that nowhere else (other than in the Nuuanu to Niu region) on the large Island of Oahu has the unique "*acutisepalum*" type of inflorescence been found. Moreover, this type of inflorescence is revealed with remarkable constancy throughout a suite of specimens collected over a period of more than seventy years.

5. **Pittosporum amplectens** Sherff, Field Mus. Bot. Ser. 22: 407. 1941.

At least young portions of branches strongly appressed-hispid with brown setae. Leaves subnumerous, suberect, more or less terminally disposed, brownish-green when dry, hispid when young, oblong or (at times very broadly) oblong-oblanceolate, at apex acuminate, variable in size; petiole slender, glabrous or irregularly and very sparsely tomentose, 1-4 cm. long; blade now glabrous now especially beneath sparsely appressed-setose with slender, brown setae, above rarely subglossy, beneath conspicuously salient-veiny, now only 1 dm. long and ±2 cm. wide now commonly ±1.9 dm. long and ±6.5 (or even +8) cm. wide. Flowers not seen. Peduncles of pistillate flowers axillary or cauline, often subverticillately 2–3-clustered, at least finally subglabrescent, commonly 5–10 mm. long; pedicels up to about 10, mostly 3–5 mm. long. Capsules almost semimature often 6–9-clustered, smooth and glabrous, in outline oval-oblong, 1.5–1.7 cm. long (excluding the slender, ±3 mm. long style) and 1.2–1.4 cm. wide; a single mature valve seen, this subcordate-rounded in outline, externally smooth and glabrous, about 2.3 cm. long and ±2.6 cm. wide. Seeds black, smooth, under 6 mm. long and 5 mm. wide.

Type specimen: Collected by *Joseph F. Rock*, No. 8,384, Kohala, Island of Hawaii, June 20, 1910 (Bish.).

Distribution: Northwestern Hawaii.

Specimens examined: *Rock* 8,376, on the slopes and in crater of a small extinct volcano, west of Honokanenui, mountains of Kohala, June, 1910 (Arn.); *Rock* 8,384 (type, Bish.).

Smaller-leaved sprays, at least in the absence of flowers, offer an illusory resemblance to normal material of *P. glabrum* of Oahu, but can be told by the hairs persistent here and there underneath some of the leaves. Such sprays suggest *P. sulcatum* var. *Remyi* except that they have smooth and glabrous, not rugose and pubescent, capsules. The seeds are rather small for the size of the mature capsule, thus leaving ample space in the capsular chamber. In this respect there is a resemblance to the mostly larger-fruited and otherwise very different *P. Hosmeri* and its var. *longifolium*, both of Hawaii. The very large leaves on most of the material examined call to mind, however, still other species and it is found that *P. amplectens* embraces in one combination an assortment of characters that elsewhere are more or less separately associated with diverse forms.

A tentative Greek-Latin name which Rock applied to both his No. 8,376 and his No. 8,384 in the herbarium indicated that they preferred marsh and forest.[1] Some of the largest leaves are much discolored with black patches, as in leaves, for example, of *P. Gayanum* of Kauai. In the case of *P. acuminatum*, Rock (*in herb.*) attributed such discoloration to the fungus, *Capnodium lanosum.*

6. **Pittosporum sulcatum** Sherff, Amer. Journ. Bot. 28: 26. 1941; *Pittosporum spathulatum sensu pro parte* Hillebr. Fl. Haw. Isls. 24. 1888, *non* Mann, Enum. Haw. Pl. No. 20 (Proc. Amer. Acad. 7: 151). 1867; *Pittosporum spathulatum sensu pro parte* Rock, Indig. Trees Haw. Isls. 157.[2] 1913 (*non* Mann).

a. Leaves especially numerous at tips of branchlets; their blades narrowly spatulate-oblanceolate, apically acute or gradually attenuate, basally elongate-attenuate; petioles slender, 1.5–3.5 cm. long; plants natives of small area, 21° 19–21′ N. Lat. and 157° 49′ W. Long., southeastern Oahu.

b. Capsules glabrous..........var. γ *Rumicifolium* sensu stricto.

b. Capsules more or less tomentulose.

var. γ *Rumicifolium* f. 1. *tomentellum.*

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[1] Rock had labeled all of his material as a new species, but later, in his Indigenous Trees of the Hawaiian Islands (pp. 153–172. 1913), he omitted mention of it. This omission was covered by his general explanation which follows: "the writer wishes to state that he has gathered much material from localities where Pittosporums had never been recorded. Some of them undoubtedly are new, but owing to incomplete specimens, as the wanting of flowers, or mature capsules, the writer thinks it advisable not to include them in this already voluminous book, but rather to wait for additional material and then make an exhaustive study of this very variable group of plants." In not taking up Rock's unpublished herbarium name, I have followed the recommendations accompanying the International Rules.

[2] Rock's plates nos. 55 and 56 (meant by Rock respectively for *Pittosporum glabrum* H. & A. and for *P. spathulatum* Mann) are unquestionably referable here *specifically*, but they seem to show pubescent capsules, thus indicating var. *Remyi.*

a. Leaves variable but mostly otherwise in one or more respects; plants of broad distribution in Oahu, also scattered in Molokai and (var. β) Lanai.

b. Capsules glabrous or glabrate; mature leaves glabrous. *P. sulcatum* sensu stricto.

b. Capsules pubescent within (and sometimes weakly so between) the various furrows; mature leaves often sparsely setose beneath, particularly along median vein....... var. β *Remyi*.

Shrub or tree, 2–5 meters tall; branches rigid, numerous-leaved. Leaves alternate and subremote, or close together and subverticillate, darkish-green, glabrous or the youngest ones sometimes pilose, subcoriaceous, cuneately or obovately spatulate, more or less gradually narrowed all the way from the rounded or obtuse or weakly acuminate apex into an alate or subalate petiole, this 0.5–2.5 cm. long; blade now commonly 3.5–6.5 now commonly 5.5–9 (more rarely up to 15) cm. long and 1.5–3.5 (more rarely up to 6) cm. wide. Inflorescence commonly axillary (but sometimes terminal) and nearly similar for the two sexes, yellow- or brown-pubescent with more or less multiloculate and glandular-capitulate hairs, more often 5–8-flowered; peduncle commonly 4–12 (more rarely 25) mm. long; pedicels more often 3–7 mm. long, their subulate bracts sparsely pilose and 2–3 mm. long. Sepals of staminate flowers oblongly or widely ovate, at apex subobtuse or acute, dorsally ±7-striate and minutely pubescent or glabrate, subscarious toward base along the ciliate margins, 4–5 mm. long; of pistillate flowers narrower, at apex more attenuate, dorsally longer pilose and not striate, only about 2 mm. long. Corolla white or milk-colored, for staminate flowers the tube about 8–10 mm. long and scarcely surpassing the stamens, lobes oblong-ovate, apically obtuse or rounded, about 4–5 mm. long, the abortive pistil linear and toward base appressedly and antrorsely brown-hispid; for pistillate flowers, having a tube only about 6 mm. long, lobes as before but less than 3 mm. long, the minute stamens ±1.5 mm. long, ovary at first conspicuously appressed-hispid with yellow and commonly antrorse setae, the glabrous style about 4–5 mm. long and apically 2-lobed. Capsule subquadrangular, cuspidate, deeply sulcate, glabrous or very obsoletely pubescent, finally 1.5–3 cm. long exclusive of stylar beak (this ±3 mm. long) and equally or subequally thick. Seeds somewhat shining, black or reddish-black, compressed, angulate, irregularly and minutely somewhat ridged or roughened, about 7–9.5 mm. long and about 6–7 mm. wide.

Type specimen: Collected by *Nobue Tsuji*, in windy and rainy area at top of ridge, on side of Waikane-Schofield Trail, Waianaeuka, Koolau Mts., Island of Oahu, October 16, 1932 (Bish.).

Distribution: Islands of Oahu and Molokai.

Specimens examined: Oahu.—*Captain Beechey*, see *Lay & Collie; Erling Christophersen & Edward Hume* 1,419, alt. 500–750 meters, Kahuauli Ridge, December 17, 1930 (Berl.; Bish.; Field); *Christophersen & Gerrit P. Wilder* 1,429 *pro parte*, moist ground, alt. 500 600 meters, East Palolo ridge, January 6, 1931 (Berl.; Bish.; Field; *cum P. acutisepalo commixta*); *Hattie Davis*, alt. 2,325 feet, Waikane-Schofield Trail, Koolau Mts., October 16, 1932 (Bish.); *Otto Degener & Emilio Ordoñez* 12,053, small forest tree, C.C.C. Trail, Kawailoa, July 3, 1938 (Berl.; Field); *Degener, Ordoñez, & J. Kepaa* 12,774, in woods, Peahinaia Trail, April 28, 1940 (Berl.; Deg.; Field); *Degener, Park, et alii* 10,810, in forest, southeast slope of Kaala, February 2, 1936 (Deg.; N.Y.); *Degener, Park, & Topping* 11,020, in forest, C.C.C. Trail, Aiea, February 16, 1936 (Deg.; Field); *Degener & Felix C. Salucop* 11,201, in forest, on ridge north-northeast of Kaala summit, April 11, 1937 (Field); *Degener, Salucop, & Arlantico* 11,535 *pro parte*, in lower forest, C.C.C. Trail, Aiea, December 6, 1937 (Deg.; Field; Mo.); *iidem* 11,569, coarsely branched tree, 11 feet tall, in forest, alt. 2,400 feet, southeast slope of Kaala, December 19, 1937 (Berl.; Deg.; Field, 3 sheets; *forma foliis supra subnitidis lamina usque ad 15 cm. longa et ad 6 cm. lata*); *iidem* 11,570, in forest, alt. about 3,000 feet, same locality and date (Berl.; Deg.; Field); *Degener, Takamoto, & Martinez* 10,799 *pro parte*, in forest, C.C.C. Trail, Aiea, March 15, 1936 (N.Y.); *K. Duker*, in wet forest, Manoa Cliff Trail, Manoa Valley, July 31, 1933 (Bish.; Field); *G. R. Ewart, III*, half-way on Pupukea-Laie Trail, November 9, 1928 (Field); *Abbé Urbain Faurie* 2, alt. 600 meters, Kalihi, May, 1910 (Arn.; Del.; Par.); *Charles N. Forbes*, Koolauloa Mts. between Punaluu and Kaipapau, November 14–21, 1908 (Bish.; leaves very slightly appressed-setose underneath, thus suggesting var. *Remyi*); *Forbes*, Waiolani Ridge, Lanihuli Trail, September 17, 1908 (Bish.); *Forbes*, Waiolani Ridge, December 10, 1908 (Bish.; Field; capsular valves slightly pubescent near edges); *Forbes*, Makaha Valley, February 12–19, 1909 (Bish.); *Forbes*, Palolo Valley ridges, April 20, 1909 (Field); *Forbes*, ridge between Waialae Nui and Palolo, April 20, 1909 (Bish.); *Forbes* 1,433-*O pro parte*, on ridge, west side of Nuuanu Valley, January 7, 1910 (Mo.); *Forbes* 1,605-*O*, trail between Konahuanui and Olympus, November, 1910

(Bish.); *Forbes* 1,896-*O*, west edge of Palolo Crater, January 27, 1914 (Bish.); *Forbes* (*with Dean Lake*) 1,972-*O*, Waimanu Ridge, October 27–30, 1914 (Bish.; Mo.); *Forbes* (*with Dean Lake*) 1,987-*O*, same locality and date (Bish.); *Forbes* 2,220-*O*, Wahiawa Headgate Trail, August 17–20, 1915 (Bish.); *F. R. Fosberg* 9,453, in wet forest, alt. 500 meters, Kalauao-Waimalu Ridge, Koolau Mts., April 30, 1933 (Bish.; Field, 2 sheets); *Fosberg* 9,472, bush 2–3 meters tall, flowers white, in moist forest, alt. 550 meters, Kalauao Ridge, Koolau Mts., April 30, 1933 (Field); *Fosberg* 9,783, bush 2 meters tall, in wet forest, alt. 600 meters, Kipapa Gulch, Waipio, August 7, 1933 (Bish.; Field); *Fosberg* 9,787, bush 3 meters tall, flowers white, on wet, wooded ridge, alt. 750 meters, Kipapa Gulch, same date (Field, 2 sheets); *Fosberg* 10,329, bush, 3 meters tall, in wet forest, alt. 620 meters, ridge in southeast part of Makua Gulch, Hauula, Koolau Mts., October 15, 1933 (Field, 2 sheets); *Fosberg & Christophersen* 8,682, flowers cream-colored, in rain-forest, alt. 650 meters, ridge south of Kipapa Gulch, Waipio, September 18, 1932 (Field); *Fosberg & Duker* 8,790, shrub 3 meters tall, alt. 500 meters, in wet forest, on steep ridge, Waikane-Schofield Trail, Kahana, October 16, 1932 (Bish.; Field); *Gaudichaud*, without locality but doubtless from Oahu, 1819 (Del.); *J. Arthur Harris* C242,243 *pro parte*, without locality, September 10, 1924 (Minn.); *Constance Hartt*, in rain-forest, Kawailoa Trail, October 31, 1937 (Bish.); *A. A. Heller* 1,985 *pro parte*, in Nuuanu, March 23, 1895 (Berl.; Field; Gray; Kew; Minn.; Mo.); *William Hillebrand & Rev. John M. Lydgate*, without locality (Bish.; *sola capsula cum P. glabro commixt.*); *E. Y. Hosaka* 865, in wooded, moist forest, alt. 1,800 feet, south ridge, Kipapa Gulch, Waipio, November 27, 1932 (Field); *Hosaka* 1,179, tree 16 feet tall, on wooded ridge, occasional, alt. 2,000 feet, Kipapa Gulch, August 7, 1933 (Bish.; Field); *Noel H. Krauss*, alt. 1,600–1,800 feet, Manoa-Palolo Ridge, Koolau Mts., January 10, 1933 (Bish.); *Lay & Collie* (*Capt. Beechey's Expedition*), without locality (Del.; important as showing an immature capsule with very definite grooves; had been labeled in pencil, "*glabrum*," but differs in its fruit from the Lay & Collie type of *P. glabrum* at Kew); *V. MacCaughey*, Mt. Waiolani, October, 1914 (Bish.: Field); *Alfred Meebold* (*Otto Degener distrib. No.*) 10,801, Waikane-Kahana Trail, December, 1935 (Deg.); *Kazuto Nitta* (*Otto Degener distrib. No.*) 10,981, in forest, Pupukea region, January 12, 1930 (Field); *Joseph F. Rock*, in rain-forest, alt. 3,000 feet, slopes of Konahuanui (Arn.); *Rock*, Mt. Waiolani, October, 1914 (Arn.); *Rock &*

Ballou, Palolo Valley, November 30, 1912 (Gray); *Rock & Forbes* 783, Punaluu, November 14–21, 1908 (Arn.); *Rock & Holm*, Palolo, September, 1917 (Field); *Rock & Shaw* 10,072, Konahuanui, September, 1912 (Bish.); *Rock & Swezey* 12,581, Wailupe Valley, January 23, 1915 (Bish.); *Harold Saint John* 10,026, on wooded slope, alt. 1,300 feet, ridge south of Kipapa Gulch, Waipio, Koolau Mts., November 10, 1929 (Field); *Saint John* 11,196, shrub, 15 feet tall, on wooded ridge, alt. 1,900 feet, main ridge running southwest from Puu Lanihuli, Kalihi-Nuuanu, November 29, 1931 (Berl.; Bish.; Field); *Saint John* 11,556, shrub 10 feet tall, in woods, alt. 1,400 feet, Laie-Malaekahana Ridge, Koolau Mts., February 4, 1932 (Field); *Saint John* 13,038, shrub 15 feet tall, flowers white, fruits yellow, on wooded ridge, alt. 1,400 feet, Ewa Forest Reserve, Kalauao Ridge, March 29, 1933 (Field); *Olof H. Selling* 2,602, upper part of Kipapa Gulch, Koolau Mts., July 3, 1938 (Goth.); *Selling* 3,550, vicinity of Kaala, east side of Waianae Mts., September 25, 1938 (Goth.); Shaw, Palolo (Bish.); *Carl Skottsberg* 177, Nuuanu-Kalihi Ridge, Koolau Mts., August 13, 1922 (Bish.; Goth.); *Skottsberg* 895, Palolo, Koolau Mts., October 23, 1922 (Bish.; Goth.); *Skottsberg* 1,072, Nuuanu-Pauoa, Koolau Mts., November 5, 1922 (Goth.); *Skottsberg* 1,793, Malaekahana Trail, Pupukea, in Pupukea Forest Reserve, Koolau Mts., September 15, 1926 (Bish.; Goth.); *Amy Suehiro*, alt. 3,500 feet, Mt. Kaala, January 8, 1933 (Bish.); *Otto Swezey*, Koolau Mts. (Bish.); *Nobue Tsuji*, in windy and rainy area at top of ridge, on side of Waikane-Schofield Trail, Waianaeuka, October 16, 1932 (type, Bish.).

Molokai.—*Abbé Urbain Faurie* 11, Halawa, June, 1910 (Arn.; Del., 2 sheets); *William Hillebrand*, same locality, 1870 (Gray); *George C. Munro* 376 *pro parte*, Kamoku, June 5, 1916 (Bish.).

Glabrous- or essentially glabrous-fruited (*i.e.*, typical) forms of this species were referred by Hillebrand to species No. 4 in his treatment of *Pittosporum* (Fl. Haw. Isls. 24. 1888), already discussed elsewhere (Amer. Journ. Bot. 28: 26. 1941). Continuing the discussion there given, it may be noted that in the Museum of Natural History at Paris there are three more sheets of Remy 572, in addition to the sheet at Gray Herbarium, and that one of these likewise bears solely *P. glabrum* var. β Hillebr. (*i.e.*, my var. *spathulatum*). The other two bear exclusively (*the pubescent-fruited*) one of the two forms having "the suberiform epicarp deeply furrowed or runcinate" as described by Hillebrand for his *Pittosporum* No. 4, *i.e.*, his erroneously so-called "*P. spathulatum* Mann."[1] This important *pubescent-fruited* form which, together with my previously described *P. sulcatum* (*vide* p. 502), constitutes the species that has commonly passed as *P. spathulatum* among authors and collectors, is seen to have been without a valid name until recently[2] and is here treated as *P. sulcatum* var. *Remyi* (*vide infra*). (For remarks on a certain form of *P. glabrum* that slightly approaches *P. sulcatum*, see under *P. glabrum*, p. 493.)

Usually the nascent leaves are glabrous or glabrate but occasionally they are more or less densely pilose, as, for example, in Nitta (Degener distrib. No.) 10,981. This variation seems, however, to display all too much irregularity to warrant varietal segregation. I have, therefore, drawn the description of *P. sulcatum* proper to include forms with pilose nascent leaves.

Pittosporum sulcatum var. β **Remyi** Sherff, Amer. Journ. Bot. 28: 28. 1941; *Pittosporum glabrum sensu* Rock, Indig. Trees Haw. Isls., as to pl. 55. 1913; *Pittosporum spathulatum sensu* Rock, *op. cit.*, as to pl. 56.

Unlike species proper in its leaves, these commonly a little or much larger and on lower surface sparsely or at least along median vein often appressedly setose; also in its tomentose ovaries and in its mature capsules, these latter pubescent within (and sometimes obsoletely so between) the various furrows, both large and small. Frequently, too, the last one or two principal "internodes" of the branches are for a while densely appressed-hispid.

Type specimen: Collected by *Jules Remy*, No. 572 *pro parte*, on Island of Oahu, 1851–1855 (Par., 2 sheets).

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[1] On the label for one of these last two sheets Asa Gray had written as a synonym (but erroneously): "*Pittosporum glabrum* Putterl.-*non* Hook." All three sheets of Remy 572 at Paris had been studied by Gray and he (incorrectly) had determined each as his *Pittosporum Terminalioides* var. γ (for disposition of the true *P. Terminalioides* var. γ Gray, see under *P. glabrum* var. *spathulatum*, p. 494).

[2] That Mann (*loc. cit.*) could not have had this form in mind when describing his *P. spathulatum* is shown by his words," capsula glabra fere laevi" and, "capsule nearly smooth." Strictly speaking, however, a fine tomentum can be discerned here and there on his mature capsules if a good lens be used. Mann had indeed collected this very form but had commixed it with specimens of *P. glabrum* (Herb. Kew) and of his *P. spathulatum* (Herb. Corn. Univ.). His description of the fruit of *P. glabrum*, "capsula globosa tuberculato-rugosa," clearly was drawn from his mislabeled fruiting specimens of this form. It is important to note, however, that the tuberculate-roughened ("tuberculato-rugosa") nature of the mature fruit was not overlooked by Mann. Without question, Mann's designation of the capsule of his *P. spathulatum* as "fere laevi" was intended to contrast it with the capsule of what he mistakenly supposed to be fruiting material of *P. glabrum*, thus confirming my treatment of his *P. spathulatum* as being referable (varietally) to *P. glabrum*.

Distribution: Islands of Oahu, Lanai, and Molokai.

Specimens examined: Oahu.—*J. C. Bridwell,* Waiolani Ridge, August, 1916 (Bish.); *F. B. H. Brown* 1,283, tree, rare, on slopes, alt. ±400 meters, Waimalu, December 31, 1925 (Bish.); *E. Christophersen, G. P. Wilder, & E. Hume* 1,665, in forest, alt. 300–500 meters, on middle ridge, Palolo Valley, March 26, 1931 (Bish.; Field); *Otto Degener* 10,984, in rain-forest, Pig-God Trail, Punaluu, May 31, 1931 (Berl.; Deg.; Field); *Degener* 13,004, in forest, Waipilopilo, Hauula, June 11, 1940 (Berl.; Deg.; Field); *Degener & Emilio Ordoñez* 12,375, in lower forest, east of Kanehoa, May 28, 1939 (Berl.; Deg.; Field); *Degener, Park, & M. Kwon* 11,003, Pig-God Trail, Punaluu, January 17, 1932 (Deg.; Field); *Degener, Park, Potter, Bush, & Topping* 10,811, in forest, Kipapa Trail, June 2, 1935 (Deg.; Field); *Degener, Salucop, & Arlantico* 12,074, in forest, Pupukea-Kahuku region, April 3, 1938 (Berl.; Deg.; Field, 2 sheets); *Charles N. Forbes,* Lanihuli Ridges, December 10, 1908 (Bish.); *Forbes* 1,433-*O pro parte,* on ridge at west side of Nuuanu Valley, January 7, 1910 (Bish.; Field; Mo.); *F. R. Fosberg* 9,556, tree 3 meters tall, in wet forest, alt. 400 meters, Kipapa Gulch, Waipio, June 12, 1933 (Field); *Fosberg* 9,772, bush, 3 meters tall, in wet woods, alt. 550 meters, Kipapa Gulch, August 8, 1933 (Bish.; Field); *Fosberg* 10,329, bush, 3 meters tall, in wet forest, alt. 620 meters, on ridge southeast part of Makua Gulch, October 15, 1933 (Berl.; Bish.; Field); *Fosberg* 10,354, bush, 3 meters tall, in moist forest, alt. 500 meters, same locality and date (Berl.; Bish.; Field); *Fosberg* 10,713½, small tree, flowers white, on wet, wooded ridge, alt. 550 meters, Palolo-Waialae Nui Ridge, Koolau Mts., December 27, 1934 (Field; mature capsules irregularly and sparsely tomentulose); *Fosberg & M. Chong* 9,416, bush, 2 meters tall, in wet forest, alt. 650 meters, Laie-Waimea Divide, Koolau Mts., April 15, 1933 (Bish.; Field; lacking flowers but having immature capsules, in leaf-habit approaching var. *Rumicifolium* of southern Oahu); *D. Wesley Garber* 218, Woodlawn Trail, February 1, 1920 (Bish.); *William Hillebrand* 301 *pro parte,* Koolau Mts. (Kew, 2 sheets; *cum specie ipsa commixt.*); *Edward Y. Hosaka* 555, alt. 1,100 feet, on south ridge, Kipapa Gulch, Waipio, May 15, 1932 (Field); *Hosaka* 592*a*, tree, 20 feet tall, in fairly moist gully, alt. 1,300 feet, 2nd north fork, Kipapa Gulch, June 26, 1932 (Field); *Hosaka* 921, on wooded ridge, alt. 1,800 feet, Kipapa Gulch, March 5, 1933 (Bish.; Field); *Hosaka* 1,023, alt. 1,700 feet, Kipapa Gulch, May 6, 1933 (Field); *Hosaka* 1,168, tree, 16 feet tall, on wooded slope, alt.

2,000 feet, Kipapa Gulch, August 7, 1933 (Bish.; Field); *Edward P. Hume* 163, alt. 560 meters, west ridge, Kaaawa, April 12, 1931 (Berl.; Bish.; Field); *Horace Mann & William T. Brigham* 203 *pro parte*, Oahu (Corn.; *in* Field, Kew *et* Mo. *cum P. glabro commixt.*); *Alfred Meebold*, Waiahole ditch trail, June, 1932 (Bish.); *Olaf Oswald* 3, spreading habit, crest of right ridge, about 0.5 mile from shore, Kahana, September 23, 1928 (Bish.); *Jules Remy* 572 *pro parte* (Par., 2 type sheets); *Joseph F. Rock*, Palolo, May 9, 1909 (Berl.; Field); *Rock* 25 (1,069), trail to Konahuanui, January 7, 1909 (Bish.); *Rock* 1,210, Waikane, January 12, 1909 (Bish.; N.Y.); *Rock* 1,213, Waikane Mt., January 23, 1909 (Bish.); *Harold Saint John* 11,081, flowers white, on wooded ridge, alt. 1,700 feet, North Ridge, Kaaawa Valley, April 12, 1931 (Bish.; Field); *St. John* 14,068, shrub, 15 feet tall, on east ridge, in open, lower woods, alt. 1,500 feet, Puu Kanehoa, Waianae Mts., January 7, 1934 (Bish.; Field); *Shaw*, Palolo (Arn.; or is this form better referred to var. *Rumicifolium* f. *tomentellum?*); *D. LeRoy Topping* 2,824, Bowman Trail, August 31, 1924 (Deg.); *United States South Pacific Exploring Expedition under Capt. Wilkes*, mountains behind Honolulu, about 1840 (Gray, where labeled by Asa Gray, "*P. glabrum?*"; U.S., labeled by A. Gray, "*Pittosporum glabrum*, Hook. & Arn. var.?").

Lanai.—*George C. Munro*, without locality (Bish.; the 7 fruits all singly disposed on separate peduncles 7–13 mm. long, pedicels absent).

Molokai.—*Otto Degener* 10,957, in forest, Kahuaawi Gulch, May 12, 1928 (Berl.; Deg.; Field); *Degener* 10,961, in windy forest, on cliff east of Kalaupapa Leper Settlement, June 19, 1928 (Berl.; Deg.; Field); *Degener* 10,962, in forest, Halawaiki Gulch, June 21, 1928 (Berl.; Deg.; Field, 2 sheets); *Charles N. Forbes* 509-*Mo*, ridges south of the Valley, Halawa, September, 1912 (Bish.); *Joseph F. Rock*, Halawa (Arn., 2 sheets; Berl.; Bish.; Field; Kew); *Rock* 8,720, Halawa, May, 1910 (Bish., 2 sheets).

Hawaiian Islands (island not cited).—*Gaudichaud*, October, 1836 (Del.); *Gaudichaud* 268, August, 1836 (Par.).

For remarks upon var. *Remyi*[1] see under species proper.

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[1] That Hillebrand did not have this exact (pubescent-fruited) form in mind *when drawing the description* of his species no. 4 (intended for *P. spathulatum* H. Mann) is shown by his description of the ovary as "faintly pubescent." This would more accurately fit *P. sulcatum* proper (rather than its variety *Remyi*). Doubtless he overlooked the persistent pubescence of the mature capsules on Remy 572 when he included that plant after first citing his own material: "Oahu! in forests between Kalihi and Ewa."

Pittosporum sulcatum var. γ **Rumicifolium** Sherff, Field Mus. Bot. Ser. 22: 420. 1941.

Shrub or perhaps at times a small tree, ±2.5 meters tall. Leaves numerous, disposed at tips of branches, brownish-green when dry, petiole slender and 1.5–3.5 cm. long; blade narrowly spatulate-oblanceolate, at apex acute or gradually attenuate, at base elongately attenuate, above coriaceous and minutely impressed-reticulate, below manifestly salient-veiny, at first (when very immature) densely appressed-pilose, presently glabrate or glabrous, 6–13 cm. long and 1–2.5 cm. wide. Flowers unknown. Peduncles cauline or terminal, finally up to 5 or 8 mm. long, pedicels 3–6 mm. long. Capsule glabrous or glabrate; valves 1.8–2.5 cm. long and wide.

Type specimen: Collected by *F. R. Fosberg*, No. 8,973, bush, 2.5 meters tall, in wet forest, alt. 680 meters, peak at head of Pauoa Flats, Pauoa, Island of Oahu, October 30, 1932 (Field).

Distribution: Southeastern Oahu.

Specimens examined: *Otto Degener* 11,005, in sunny rain-forest, above Pauoa Flats, Honolulu, July 3, 1923 (N.Y.); *Fosberg* 8,973 (type, Field); *Joseph F. Rock* 10,073, Manoa Valley, September, 1912 (Bish.; Gray).

In its more slender and somewhat more congested leaves, this perplexing variety appears sufficiently separable from *P. sulcatum* proper, to which it is allied in its glabrate or even very glabrous capsules. In the shape of its leaves, however, it is closer to var. *Remyi*.

A duplicate of the sheet cited for Degener 11,005 is at Field Museum. This sheet bears two sprays remarkably identical, as to foliage, with the cited Degener material, but with the two capsules more or less tomentulose, as in var. *Remyi*. This form I have designated as:

Pittosporum sulcatum var. **Rumicifolium** f. 1. **tomentellum** f. nov.

Capsulae plus minusve tomentellae.

Type specimen: Collected by *Otto Degener*, No. 11,005 *pro parte*, in sunny rain-forest, above Pauoa Flats, Honolulu, Isl. Oahu, July 3, 1923 (Field).

Distribution: Known only from type locality in southeastern Oahu.

Specimens examined: *Degener* 11,005 *pro parte* (type, Field).

P. sulcatum var. *Rumicifolium* and its forma *tomentellum* might be construed by some writers as local forms, identical as to peculiar foliage, of *P. sulcatum* proper and its var. *Remyi*, respectively. A second interpretation is the one provisionally adopted here, namely, that the glabrous-fruited plants constitute a valid variety of *P. sulcatum* and that the tomentulose-fruited plant is a subordinate forma. A third interpretation might be that the material cited for var. *Rumicifolium* proper, although collected at intervals extending over a period of twenty years and all the while remaining unique, represents a teratological effect. Still a fourth interpretation might well be that we here have to do with hybridization and that the glabrate or glabrous versus the tomentulose capsules (of var. *Rumicifolium* and f. *tomentellum* respectively) represent a subsequent splitting apart of previously hybridized unit-characters. Future field observations and perhaps experiments are much to be desired.[1]

7. **Pittosporum dolosum** Sherff, Field Mus. Bot. Ser. 22: 421. 1941.

Leaf-blades 8–12 cm. long and 2–4.3 cm. wide. *P. dolosum* sensu stricto.

Leaf-blades up to 2 dm. long and to 5 cm. wide. . var. *β aquilonium.*

Tree ±5 meters tall. Leaves crowded at tips of branches, often suberect, brownish-green or reddish-brown when dry, petiole 1–3 cm. long; blade spatulate-obovate, at base subelongate-cuneate, at apex more or less acuminate, at margin minutely also often coarsely revolute, 8–12 cm. long and 2–4.3 cm. wide; upper surface presently glabrous, subcoriaceous, often glossy, minutely impressed-reticulate; lower surface manifestly salient-veiny, at first (when very young) hispid, presently almost glabrate but commonly very sparsely appressed-setose. Inflorescence ±5-flowered, cauline or rarely terminal. Peduncle tomentose, 4–6 mm. long; bracts linear-subulate, subglabrate, under 5 mm. long; pedicels tomentose, 3–5 mm. long. Sepals ovate, pubescent, 3–5 mm. long. Corolla's tube 7–9 mm. long, lobes about 5 mm. long. Capsule oblong-ovoid or cordate-ovoid, rugose and sulcate, finally glabrate or very sparsely pubescent, 1.6–2.7 cm. long (the persistent, ±3 mm. long style excluded) and ±2 cm. wide. Seeds black, flat or flattish, smooth, 7–8 mm. long.

Type specimen: Collected by *Joseph F. Rock*, No. 418, Punaluu Mts., Island of Oahu, December 24, 1908 (Gray).

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[1] It is quite possible that certain specimens collected at Palolo and other nearby localities and by me referred in this text to *P. sulcatum* or its var. *Remyi* will be found on further study to belong here.

Distribution: Northeastern Oahu.

Specimens examined: *Otto Degener, Kwan Kee Park, & Manuel Kwon* 11,003, in rain-forest, Pig-God Trail, Punaluu, January 17, 1932 (Deg.; Field; with foliar aspect of *P. sulcatum* and perhaps hybridized); *Abbé Urbain Faurie* 9, alt. 800 meters, Punaluu, May, 1910 (Arn.; Del.); *Charles N. Forbes,* between Punaluu and Kaipapau, Koolauloa Mts., November 14–21, 1908 (Bish.); *Forbes & Dr. C. M. Cooke, Jr.,* same locality, May 3–8, 1909 (Berl.; Bish.; Field); *Forbes, with C. L. Thompson,* same locality, May 8–13, 1909 (Berl.; Bish.; Field); *F. R. Fosberg* 9,540, tree, 5 meters tall, in wet forest, alt. 740 meters, divide between Kahana and Waianae Uka, Waikane-Schofield Trail, May 14, 1933 (Bish.; Field, 2 sheets); *Joseph F. Rock,* Koolau Mts., 1908 (Arn.); *Rock* 23 (173), same locality, December 3–14, 1908 (Field); *Rock* 23 (392), Punaluu, December 24–29, 1908 (Field); *Rock* 23 (781), same locality, December 3–14, 1908 (Kew); *Rock* 170 *pro parte,* Punaluu Mts., December 3–14, 1908 (Bish.); *Rock* 418 (type, Gray: cotype, Bish.); *Rock* 535, above the Valley of Kaliuwaa, Punaluu, December 24, 1908 (Arn.); *Harold Saint John* 10,584, on crest of ridge, alt. 2,200 feet, Punaluu, September 28, 1930 (Bish.; N.Y.); *Olof H. Selling* 3,676, Punaluu, September 27, 1938 (Goth.).

Rock, who had collected this species in the vicinity of Punaluu, northeastern Oahu, referred it to *P. spathulatum* Mann, by which he meant the recently named *P. sulcatum* (see p. 502). From *P. sulcatum* it differs in having its leaves mostly with a few scattered, appressed hairs on the lower surface, their venation usually more pronounced, their color usually more brownish or reddish-brown when dried, their position more nearly ascending or erect and their arrangement more compact, their margins more often loosely rolled underneath (independently of and in addition to the minute revoluteness present in most *Pittosporum* species), etc. The hairs of the lower surface may be lacking on several leaves but nearly always show on some, now toward the base now toward the tip but more consistently along the midvein. The geographic distribution appears restricted to the mountains of the Land-Section Punaluu and of the area slightly southwest.

Pittosporum dolosum var. **β aquilonium** Sherff, Field Mus. Bot. Ser. 22: 422. 1941.

Shrub ±2 meters tall or perhaps becoming a small tree. Leaves more elongate, petiole up to 4 cm. long; blade up to 2 dm. long and 5 cm. wide, at apex more often acuminate. Ovary densely tomentose. Mature capsule subglabrate.

Type specimen: Collected by *Amy Suehiro*, on South Opaeula Ridge, Paalaa, Island of Oahu, September 25, 1935 (Bish.).

Distribution: Apparently frequent in the Land-Section of Paalaa, northern Oahu, and rare southward in Kipapa Gulch, Oahu.

Specimens examined:[1] *Otto Degener, Emilio Ordoñez, & Joe Kepaa* 12,779, in woods, Peahinaia Trail, April 28, 1940 (Deg.; Field); *F. R. Fosberg* 8,850, bush, 2 meters tall, in wet forest, alt. 500 meters, South Ridge, South Helemanu Gulch, Paalaa, September 25, 1933 (Bish.; Field); *Frank Kitamura*, on open, moist slope, alt. 1,450 feet, ridge of South Opaeula Gulch, Paalaa, September 24, 1933 (Bish.); *Harold Morley* 19, in moderate forest, alt. 1,600 feet, ridge south of South Opaeula Gulch, September 24, 1933 (Bish.); *Amy Suehiro*, South Opaeula Ridge, September 25, 1935 (type, Bish.).

The leaves commonly retain a few appressed setae close to the midvein, on the lower surface, and thus suggest *P. sulcatum* var. *Remyi*. They average much larger, however, than in that variety; moreover, the mature capsules are subglabrate, not pubescent, in most of the large and small surface grooves. They are approached in size by those found on some specimens of *P. sulcatum* proper of the Kaala region in Oahu. The numerous Kaala specimens examined for *P. sulcatum* proper, however, invariably have the leaves glabrous on both surfaces when mature. The foliar habit seems to place the type plant most logically as a variety under *P. dolosum*, from which it can be told easily by its larger leaves (their blades mostly 12–20 cm. not 8–12 cm. long). Var. *aquilonium*, furthermore, grows considerably west of the divide of the Koolau Mountains, while *P. dolosum* proper grows on the eastern side.

8. **Pittosporum Forbesii** Sherff, Field Mus. Bot. Ser. 22: 423. 1941.

Nascent branches pubescent. Leaves numerous, crowded toward tips of branches, their somewhat slender petiole 5–13 mm. long; blade obovate or widely oblong-oblanceolate, at apex obtuse or rounded, at base cuneate-narrowed, commonly 5–8 cm. long and 1.8–3 cm. wide, at first densely tomentose with reddish-brown or presently silvery tomentum, finally above (more rarely also below) irregularly or sometimes almost entirely glabrous. Flowers unknown. Fruit-bearing inflorescences cauline, shortly (about 5–7 mm.) pedunculate, pedicels only 1–3 mm. long. Capsule small, 1.5–2 cm. long, in outline oblong-ovate; valves finally flat, obovate, under 2 cm. wide, outwardly at first tuberculate and densely whitish-tomentose finally almost glabrate and not tuberculate but under a lens much and minutely convoluted. Seeds intensely black, thick, 4–5 mm. long, rugose and convoluted all over unless on faces. Style at first scarcely 2 mm. long, finally (as a capsular beak) about 1–1.5 mm. long.

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[1] A somewhat similar specimen by Noel H. Krauss, from the Pupukea-Kahuku Trail, alt. 1,400–1,600 feet, in the extreme north of Oahu, has a terminal raceme of anomalous, 4-merous flowers and cauline clusters of staminate flowers. It has been laid aside for more detailed investigation.

Type specimen: Collected by *Charles N. Forbes*, No. 122-*Mo*, on slopes of Puu Kolekole, Island of Molokai, July, 1912 (Bish.).

Distribution: Known only from type locality in southeastern Molokai.

Specimens examined: *Forbes* 122-*Mo* (type, Bish.).

Probably best regarded as a sister species to *P. Terminalioides*, a species not known as yet from the Island of Molokai. Indeed, the collector, Mr. Forbes, wrote of it on the type sheet: "Probably related to *P. terminalioides*. May be new. Glabrous small capsule. No flowers yet." *P. Terminalioides* is a species which usually can be identified rather easily and yet which varies so much in most of its characters as to invalidate most positions assigned to it in a key. It is probably best separated from *P. Forbesii*, aside from geographic considerations, by the upper surfaces of the leaves. These as a rule are soon glabrous or glabrate, while in *P. Forbesii* most of the upper leaf-surfaces retain over considerable areas a thin coating of densely matted, silvery hairs.

The species was dedicated to Mr. Forbes, who, before his death in 1920, had greatly assisted my studies with the collection and lending of numerous Hawaiian specimens.

9. **Pittosporum Terminalioides**[1] Planch. *in* Herb. Hook. *ex* A. Gray, Bot. U. S. Explor. Exped. 231. 1854; *Pittosporum glabrum sensu* Putterlick *pro parte*, Synops. Pittosporearum 11. 1839 (exclud. syn. Hook. & Arn.); *Pittosporum glabratum* Putterl. *pro parte ex*

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[1] Planchon, the author of the name *Pittosporum Terminalioides*, had spelled the trivial name "*terminalioides*" on the type sheet at Kew. Asa Gray published the name with this same spelling. Hillebrand later (Fl. Haw. Isls. 22 and 24. 1888) altered the name by dropping the second *i*, perhaps through oversight or perhaps assuming that Planchon had been concerned merely with a falsely terminal inflorescence, in which latter case Hillebrand's spelling would be correct. However, the Kew type (now before me) shows no terminal inflorescence at all, although

Drake del Castillo, Ill. Fl. Ins. Mar. Pacif. 111. 1890; *Pittosporum glabratum* Putterl. *pro parte ex* Rock, Indig. Trees Haw. Isls. 159. 1913.

a. Peduncles up to 6 cm. long; native of southwestern Hawaii. var. γ *macropus*.

a. Peduncles under 2.8 cm. long.

  b. Capsules up to 4 cm. long and to 2.9 cm. wide; native of eastern and southern Hawaii.................. var. β *macrocarpum*.

  b. Capsules under 3 cm. long.

    c. Leaves coriaceous; capsular valves 2–2.8 cm. long; native of Hawaii.................. *P. Terminalioides* sensu stricto.

    c. Leaves often somewhat thinner; capsular valves commonly under 1.8 cm. long; native of Maui....... var. δ *mauiense*.

A stiff or rarely somewhat scandent shrub, 1.8–3 meters tall, terminal portions of branchlets grayish- to ferruginous-tomentose. Leaves conspicuously crowded near ends of branchlets; blade coriaceous, densely whitish- to ferruginous-tomentose on both surfaces when young, usually soon glabrous or glabrate and finely areolar-reticulate above, moderately salient-veiny and (usually becoming grayish-) tomentose or in age occasionally glabrate below, usually 5–12 cm. long and 1.5–4 cm. wide, spatulate to obovate, apically rounded or bluntly acuminate, basally tapering into a slender or more or less subalate petiole, this 0.5–4 cm. long. Inflorescence axillary or cauline, short, tomentose, peduncle thickish and commonly 1–2.5 cm. long,[1] the tomentose pedicels 2–6 mm. long. Fertile and sterile flowers occurring indiscriminately near ends of branchlets and on bare stem. Sepals lanceolate to ovate, apically acute, tomentose, 2–4 mm. long. Corolla cream-white, tube 5–9 mm. long, lobes half as long. Ovary tomentose. Capsule densely or moderately tomentose or except in small patches glabrate, flattened (rarely 3-valved and trigonous); valves 2–2.8 cm. long and

two detached capsules are glued to the sheet, just below the leafy spray; these evidently had been cauline in origin, as revealed by two or more remaining cauline pedicels. Moreover, the genus *Terminalia* L. (family Combretaceae) has many species that are resembled by *Pittosporum* species, Planchon's species among them, and there seems no doubt that Planchon meant to spell the trivial name exactly as he did, and in allusion to such a resemblance.

[1] Hillebrand (Fl. Haw. Isls. 24. 1888) gives the peduncle as ½–1 line long. This apparently was accepted as true by Skottsberg (Meddel. Göteborgs Bot. Trädgård 10: 109. 1936), in segregating as his var. *macropus* a form with peduncles up to 6 cm. long. Rock (*loc. cit.*) describes the peduncle as about 2 to 10 mm. long. In well developed material, however, peduncles 2–2.5 cm. long sometimes occur.

subequally or much less broad, with a usually shallow longitudinal median groove and usually some transverse waves (but not boldly sulcate or conspicuously rugose), when separated in age frequently orbicular in outline and very flat, the base at times subemarginate, the apex tipped with a stylar rostrum, this usually 1–2.5 but at times 5 or even 7–8 mm. long. Seeds rugose, usually dull, purple or brownish, 4–5 mm. in diameter.

Type specimen: Planchon had given the name *Pittosporum terminalioides* in the herbarium at Kew to a specimen, David Douglas 20, from the "Sandwich Islands." Since Douglas collected exclusively upon the Island of Hawaii, so far as his Hawaiian Island collections were concerned (*fide* H. Mann, Enum. Haw. Pl. [Proc. Amer. Acad. 7:] 144. 1867), it is clear that the Douglas plant came from Hawaii (*cf.* footnote under *P. glabrum*, p. 492). But Asa Gray was the first to publish a description and, while he parenthetically reported the species to have been "also collected by Douglas" (and indeed employed the specific name previously given by Planchon to the Douglas plant), he clearly had in mind principally the plants collected by the United States Exploring Expedition. He cited these as having been collected "on the coast southeast of the crater of Lua Pele and Puna. On Mouna Loa at an elevation of 7,000 feet." At least two specimens of the "Mouna" (*i.e.*, Mauna) Loa habitat are still extant (Par.; U.S.).

Distribution: Island of Hawaii.[1]

Specimens examined: *Otto Degener* 10,978, in dry *aa* desert forest, near Kaalualu, September 12, 1929 (Field); *Degener, Iwasaki, & E. B. Bartram* 10,979, partly climbing, in dry region, Kipuka Neenee (Kipuka Nene), January 27, 1930 (Field); *Charles N. Forbes* 274-*H*, Kealapuali (Koolapuuwale), Kona, June 29, 1911 (Bish.; Field, 2 sheets; Gray); *Forbes* 360-*H*, Kapua, Kona, July 25, 1911 (Berl.; Field; Gray); *Forbes* 368-*H pro parte*, Kau Desert, August 2, 1911 (Bish.; Field); *Forbes* 815-*H*, near the Lava Flow of 1899, June 12, 1915 (Berl.; Bish.; Field); *William Hillebrand & Rev. John M. Lydgate*, Hawaiian Islands (Bish.); *Horace Mann & William T. Brigham* 313, alt. 7,000 feet, Hualalai, 1864–1865 (Bish.; Del.;

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[1] Hillebrand (Fl. Haw. Isls. 24. 1888) gives several localities on Hawaii but adds: "Lanai! A similar form from the low and dry hills of the east end of Oahu!" I have seen no material of *P. Terminalioides* proper from Lanai or Oahu and have been unable to examine the Hillebrand specimens in Berlin. It may of course be that for Lanai Hillebrand had in mind the form referred here to the var. *lanaiense*. As to material from Oahu, it may be pointed out here that Forbes 2,462-*O*, from a ridge between Niu and Wailupe, toward the extreme southeastern end of Oahu, had been annotated at Bishop Museum: "Hillebrand refers this to *P. terminaloides*." This specimen fits well, however, within the limits of *P. flocculosum* (*qu. vide*).

Gray); *Joseph F. Rock*, Manuka, Kau (Arn.; Bish.); *Rock*, Hawaiian Isls., November 7, 1912 (Field); *Rock* 10,075, Manuka, South Kona, January, 1912 (Gray); *Rock* 10,076, on slopes of Hualalai, alt. 7,000 feet, great central plain, February, 1912 (Bish.; Gray); *Rock* 13,031, Hilea lava flow, Kau, August, 1917 (Bish.); *United States South Pacific Exploring Expedition under Captain Wilkes*, alt. 7,000 feet, Mauna Loa, about 1840 (Par.; U.S.).

Pittosporum Terminalioides var. *β* **macrocarpum** Sherff, Amer. Journ. Bot. 28: 28. 1941.

Leaves commonly more acuminate, their tomentum beneath remaining mostly reddish-brown. Peduncles up to 6 mm. or at times up to 1.7 cm. long, pedicels at anthesis slenderish and longer (up to 11 mm.). Capsule ovate or oblong in outline, at first densely tomentulose but at last scatteringly or over a part of its surface subglabrate, larger, up to 4 cm. long excluding the beak and up to 2.9 cm. wide.

Type specimen: Collected by *Charles N. Forbes*, No. 431-*H*, Kapapala, Kau District, Island of Hawaii, August, 1911 (Bish.).

Distribution: Eastern and southern Hawaii.

Specimens examined: *Forbes* 431-*H* (type, Bish.: cotypes, Berl.; Field); *Forbes* 963-*H*, in forest, between Kipuka Waiakea and Keawewai, June 27, 1915 (Berl.; Bish.; Field); *William Hillebrand* 305, Hawaii (Kew; peduncle 1.5–1.7 cm. long); *Joseph F. Rock* 12,988, Kona Road, South Kona, August, 1917 (Bish.).

The leaves, while at first very tomentose on both surfaces, soon become glabrate or glabrous above, also often somewhat glaucous. Those of the Rock specimen show a similarity to those of *P. hawaiiense* of the same vicinity.

Pittosporum Terminalioides var. *γ* **macropus** Skottsb. Meddel. Göteborgs Bot. Trädgård 10: 109. 1936.

Leaf-blades 8–13.5 cm. long and 3–6 cm. wide, -petioles 2–3 cm. long. Peduncle up to 6 cm. long, pedicels up to 1 cm. long. Capsule oblong in outline, 2–2.7 cm. long excluding the beak and 1.5–2.4 cm. wide, remaining tomentose in age, the median, lengthwise groove deep and conspicuous, the transverse wrinkles early evident.

Type specimen: Collected by *Carl Skottsberg*, No. 619, at about 600 meters altitude, in dry land along Kau-Kona Road, between Pahala and Naalehu, Island of Hawaii, September 21, 1922 (Bish.).

Distribution: Known only from southwestern Hawaii.

Specimens examined: *Otto Degener* 10,993, in moderately dry region, north of Alika Lava Flow, August 26, 1926 (Field, where 2 of the 3 capsules are 3-valved);[1] *Skottsberg* 619 (type, Bish.: cotype, Goth.).

Pittosporum Terminalioides var. δ **mauiense** Sherff, Amer. Journ. Bot. 28: 28. 1941; *Pittosporum Terminalioides sensu* Rock, Indig. Trees Haw. Isls. 159. 1913 (as to Maui plants and the accompanying plate 57).

Leaves often somewhat thinner, blade commonly 7–9 cm. long and 2–3 cm. wide, few or no veins salient, petiole 1–2 cm. long. Peduncle up to 2.8 cm. long, pedicels ±6 mm. long, capsules smaller and somewhat more numerous, their oblong-orbiculate valves commonly under 1.8 cm. long and wide.

Type specimen: Collected by *Joseph F. Rock,* No. 8,669, alt. 1,500 feet, lava fields of Auwahi, District of Kahikinui, southwestern slopes of Haleakala, East Maui, November, 1910 (Bish.).

Distribution: Island of Maui.

Specimens examined: *Joseph F. Rock,* Isl. Maui (Bish.); *Rock,* Auwahi, East Maui, November, 1910 (Gray, 2 sheets); Rock 8,669 (type, Bish.: cotype, N.Y.); *Carl Skottsberg* 791 *pro parte,* Iao Valley, West Maui, October 11, 1922 (Bish.); *Gerrit P. Wilder,* Maui, 1913 (Bish.).

Rock (*loc. cit.*) states that this variety "differs from the Hawaii plants [*i.e.*, the species proper] in the leaves only, which are much thinner texture, being chartaceous and having rather indistinct veins." As noted above, however, the capsules are smaller and somewhat more numerous.

Pittosporum Terminalioides var. ε **lanaiense** Sherff, Field Mus. Bot. Ser. 22: 429. 1941.

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[1] While Degener 10,993 is clearly the var. *macropus,* its tendency to have 3-valved capsules suggests the large-fruited *P. Hosmeri* and var. *longifolium* of southwestern Hawaii. *P. Hosmeri* and its var. *longifolium* frequently have 3- or even 4-valved capsules, but these are very different from those of var. *macropus.*

To the specimens above cited for var. *macropus* may be added *St. John, Hashimoto, Hosaka, Lindsay, & Mitchell* 11,841, wooded *kipuka,* on *aa* lava, alt. 1,000 feet, Manuka *mauka,* Isl. Hawaii, December 26, 1931 (Bish.; Field). This is a topotype of var. *macropus* and the leaves match closely those of the type. However, a packet enclosed with one of the specimens contains a small, smoothish capsule, minutely puberulent in many areas under the lens. The valves are about 2 cm. long and broad. It is possible that the capsule came from a different species (although in the species proper a similar latitude is observable in the variation of capsular pubescence; thus, for example, the Planchon type, Douglas 20, at Kew has capsules almost glabrate except for a few tiny tomentulose areas, whereas most all other observed specimens have the capsules rather definitely tomentose or tomentulose).

Leaves obovate, blade 6–8 cm. long and 2–4 cm. wide, petiole ±1 cm. long. Peduncle finally up to about 2.6 cm. long, the flowers subsessile. Capsules smaller; valves about 1.5 cm. long and wide, scarcely rugulose, tomentellous, lacking a lengthwise, median furrow.

Type specimen: Collected by *George C. Munro*, No. 333, Paoma, Island of Lanai, April 18, 1914 (Bish.).

Distribution: Known only from type locality in northern Lanai.

Specimens examined: *Munro* 333 (type, Bish.); *Munro* 428, Paoma, April 18, 1914 (Bish.).

The specimens cited had been labeled for *P. Terminalioides* but are apparently quite distinct from the numerous specimens of *P. Terminalioides* examined from the Island of Hawaii. The leaves are proportionately broader and seem consistently small. The capsules are small and lack the shallow, lengthwise, median furrow that usually runs along each valve in the species proper.

10. **Pittosporum kahananum** Sherff, Field Mus. Bot. Ser. 22: 417. 1941.

Loose shrub or spreading tree. Leaves numerous, clustered at and subverticillately below tips of branches, brownish-green when dry, petiole glabrous and 0.8–2 cm. long; blade oblong-obovate, coriaceous, at apex rounded or obtuse, at margin revolute, when nascent densely appressed-hispid, above presently glabrous and impressedly reticulate-veiny, below somewhat conspicuously salient-veiny and finally glabrescent or moderately or even very densely appressed-hispid with white or brown setae, 4–8 cm. long and 1.2–2.5 cm. wide. Inflorescences cauline and axillary, sessile, 1–8-flowered. Only staminate flowers seen. Bracts now ovate now subulate, pubescent or glabrescent, under 4 mm. long. Pedicels tomentose, thick, ±2 mm. long. Sepals subnarrowly or broadly ovate, at apex acuminate or obtuse, moderately appressed-hispid outside, at margin scarious, 3.5–4.5 mm. long. Petals 5 (rarely 6), more often distinct, white, 12–13 mm. long (including expanded terminal portion, this oblong and ±4 mm. long). Stamens slender, ±6.5 mm. long, subequal or even equal to pistil in length. Capsule (a single one seen) ovoid; valves finally flat, at base subcordate-truncate, externally very rugose and sulcate, otherwise more or less glabrous, about 3.5 cm. long and 2–2.3 cm. wide. Seeds intensely lustrous-black, angled and somewhat wrinkled, about 6.5–7 mm. long, 5–5.5 mm. wide, 2.5–3 mm. thick.

Type specimen: Collected by *Harold Saint John,* No. 10,152, spreading tree, flowers white, alt. 2,400 feet, near the divide, Waikane-Schofield Trail, Kahana, Island of Oahu, January 19, 1930 (Bish.).

Distribution: Known only from type locality in eastern Oahu.

Specimens examined: *F. R. Fosberg* 12,248, loose shrub 1 meter tall, flowers cream-white, odor not pleasant, on steep, wet, exposed, bushy slope, alt. 750 meters, Waikane-Schofield Trail, Kahana, July 27, 1935 (Bish.; Field); *Saint John* 10,152 (type, Bish.).

The leaf-shape and fruit are much the same as in *P. sulcatum.* The leaves are very different, however, in that many of them retain a usually dense coating of innumerable more or less coalesced, white or brown hairs. *P. sulcatum* has glabrous adult leaves and its var. *Remyi* has at the most a very few hairs on the lower leaf-surfaces. *P. cauliflorum* var. *fulvum* is occasionally rather small-leaved and then may superficially resemble *P. kahananum.* That variety can be told at once, however, by the dense tomentum on the younger parts and often on the lower surfaces of the older leaves, also by the tomentose capsules. In *P. kahananum* the hairs are fewer and straighter, justifying the term hispid rather than tomentose, and the capsules are essentially glabrous (though rugose).

11. **Pittosporum cauliflorum** H. Mann, Enum. Haw. Pl. No. 18 (Proc. Amer. Acad. 7: 151). 1867.

a. Leaves with reddish-brown tomentum beneath, capsules finally more or less glabrate.................... var. γ *cladanthoides.*

a. Leaves, unless when emerging from the bud, brownish- to yellowish-tomentose beneath.

  b. Capsules subsessile............... *P. cauliflorum* sensu stricto.

  b. Capsules pedicellate with pedicels at least 5–11 mm. long. var. β *pedicellatum.*

A loosely branched tree, 9 meters or more high, trunk 2–3 dm. thick. Leaves crowded at ends of stout and stiff branchlets, coriaceous, closely areolate and finally glabrous to glabrate above, petiole 1–3 cm. long and when young tomentose; blade obovate to elongate-obovate or cuneate, 8–20 cm. long and 3–7.5 cm. wide, at apex rounded or shortly apiculate, gradually narrowed into petiole, upper surface pale-green, lower surface densely covered with a soft fawn- or pale-lemon-colored tomentum. Fertile flowers apparently somewhat larger than the sterile ones, cauline on the bare branches below the leaves, grouped subsessilely in clusters of 8–12 on tomentose peduncles 4–8 mm. long. Bracts tomentose, ±5 mm. long. Sepals ovate, obtuse, tomentose, ±3 mm. long. Corolla cream-colored, its tube 8–10 mm. long, the broad, spreading lobes 4–5 mm. long. Stamens ±5 mm. long, reaching to above middle of style, their anthers sagittate. Ovary tomentose, about half as long as style, stigma capitate and 2-lobed. Capsule thick-woody; the flattened valves with a slight median furrow at least above but otherwise subsmoothish or at times somewhat transverse-rugose, about 2.8 cm. long and 2.5 cm. wide, tipped with a stylar beak ±3 mm. long, the tomentum mostly deciduous in age; endocarp pale-orange. Seeds flat-angular, crenulate or tuberculate at the back and edges, 6–7.5 mm. long.

Type specimen: Collected by *Horace Mann & William T. Brigham*, No. 601, Kaala Mts., Island of Oahu, May 4, 1864–May 18, 1865. Type herbarium not cited, but the two specimens at Cornell University, one of them unnamed by Mann, and the named one at Gray Herbarium have as good claims as any to being regarded as the type.

Distribution: Known only from Kaala Mts., Island of Oahu.

Specimens examined: *Mann & Brigham* 601 (type collection: Corn., 2 sheets; Gray; Mo.).

The capsules on the above cited *named* specimens at Cornell University and Gray Herbarium are fewer, larger, less mature, and less rough, offering a striking resemblance to those of *P. glabrum* var. *spathulatum.* The capsules of Mann's unnamed specimens above cited for Cornell University, also those for his similarly unnamed specimen at the Missouri Botanical Garden, are slightly rugose, as sometimes happens on specimens of *P. glabrum* and its var. *spathulatum.* They are, however, not of the strongly rugose or tuberculate type as is common, for example, in *P. sulcatum* or its var. *Remyi.* This fact is most important to note, because nearly all herbarium specimens[1] collected since Mann's time and referred by various workers to *P. cauliflorum* or to varieties of it have the definitely rugose type of capsule and must be separated specifically (see *P. cladanthum* and vars.).

Pittosporum cauliflorum var. *β* **pedicellatum** Sherff, Amer. Journ. Bot. 28: 20. 1941.

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[1] In fact all specimens except those referred below to *P. cauliflorum* var. *pedicellatum* and var. *cladanthoides.*

Tree ±5.5 meters tall, trunk about 1 dm. thick, leaves similar to those of var. *fulvum* (blade now 1.8 cm. long and 7.5 cm. wide now 6–8 cm. long and 3–4.5 cm. wide). Peduncle now 1–1.8 cm. long (for fertile flowers) and tomentose, now (probably for sterile flowers) 4–7 cm. long and very densely appressed-setose or supernally tomentose. Pedicels slender, tomentose, numerous (sometimes 8–15), now (for fertile flowers) 5–11 mm. long now (probably for sterile flowers) 1–2 cm. long. Flowers white, cream-colored at top. Fertile flowers: sepals 2–3 mm. long, corolla's tube 7–9 mm. long and lobes 3–5 mm. long. Capsules tranversely quadrate, about 3 cm. long; valves outwardly smooth (not wrinkled but minutely tomentose), finally flat, in outline quadrate, about 3 cm. wide; beak about 2.5 mm. long. Seeds 6.5–8 mm. long.

Type specimen: Collected by *Harold Saint John*, No. 10,378, one tree, 18 feet tall, trunk 4 inches thick, flowers white, cream at tip, pods square in cross-section, on open hillside, alt. 1,400 feet, on north fork of valley east of Palikea, Waianae Mts., Island of Oahu, February 23, 1930 (Bish.).

Distribution: Waianae Range, Island of Oahu.

Specimens examined: *Joseph F. Rock*, Waianae Mts., Palikea, December 31, 1915 (Bish., 2 sheets); *Saint John* 10,378 (type, Bish.: cotypes, Berl.; Field, 2 sheets).

The type material differs sharply from that of *P. cauliflorum* proper in its well developed pedicels. A remarkable feature, too, is the six elongate peduncles (4–7 cm. long) found on one specimen (in Herb. Field Mus.). These have the hairs of the pubescence more appressed and lengthwise disposed, rather than tomentose. Their pedicels are especially long (1–2 cm.). As all the flowers are missing or insect-eaten, it can only be surmised that they bore staminate or sterile flowers. Future collections of this variety and of the species proper are of course desirable to determine whether this surmise is correct, also what kind of peduncles and pedicels the sterile inflorescence of the species proper has, and to what extent therefore the characters of the sterile inflorescence may be used for separating the var. *pedicellatum* from the species proper. The specimens by Rock have capsules and numerous fertile (*i.e.*, pistillate) flowers.

The leaves have blades up to 2.3 dm. or more long and to ±7.5 cm. wide, and slender petioles 1–3 cm. long. The tomentum of their lower surface is brownish as in many *P. cladanthum* specimens and the veins are moderately conspicuous beneath as in that species (not strongly incrassate as in its var. *reticulatum*). From *P. cladanthum*, however, the smoothish, not strongly rugose or lumpy, exterior of the capsules should separate sufficiently well. From the next following var. *cladanthoides*, var. *pedicellatum* differs in lacking a strong reddish tinge to its brown leaf-tomentum, and in having larger, more permanently tomentose capsules, the valves of these being square, not obcordate-obovate, in outline, and about 3 cm. not 2.2–2.5 cm. long and wide.

Pittosporum cauliflorum var. γ **cladanthoides** Sherff, Amer. Journ. Bot. 28: 21. 1941.

Probably a tree. Leaves narrowly oblong-obovate, densely clothed with red-brown tomentum beneath, where moderately veiny; apically rounded-obtuse blade +7 cm. petiole ±1.5 cm. long. Fertile inflorescence shortly (about 6–8 mm.) pedunculate, ±5-pedicellate, pedicels ±5–6 mm. long. Capsules 2.2–2.5 cm. long, finally flattish; valves obcordate-obovate or oblong, outwardly not or but very minutely rugose and presently more or less glabrescent, 2.2–2.5 cm. wide, beak about 2 mm. long. Seeds 6–7 mm. long.

Type specimen: Collected by *Erling Christophersen, Gerrit P. Wilder, & Edward P. Hume*, No. 1,577, in wet forest, alt. 500–600 meters, Puu Kapu, Island of Oahu, February 12, 1931 (Bish.). Coulter (J. W., Gazetteer Terr. Haw. 189. 1935) lists two Puu Kapu's for the Island of Oahu, but I assume that the one at 21° 36′ N. and 158° 1′ W., in the Kaipapau Quadrangle of northern Oahu, was the type locality.

Distribution: Island of Oahu.

Specimens examined: *Christophersen, Wilder, & Hume* 1,577 (type, Bish.).

The type is a single branchlet about 2 dm. long, with a lone terminal whorl of five leaves and one cauline, pedunculate cluster of capsules borne about 6.5 cm. beneath these. The leaves happen to be small, but undoubtedly grow much larger at times, as in the species proper.

12. **Pittosporum halophilum** Rock *ex* Sherff, Amer. Journ. Bot. 28: 18. 1941; *Pittosporum halophylum* Rock, College Haw. Publ. Bull. 1: 16, pl. 4. 1911; *Pittosporum litorale* Rock, *loc. cit.* (*non* Merr.).

An erect shrub, about 1 meter tall; branches stout, grayish-black. Leaves densely pubescent on both sides when young, petioled, petiole more or less flattish and margined, densely tomentulose, 6–10 mm. long; mature blade obovate, at apex obtuse or rounded or even slightly emarginate, at base shortly cuneate-acuminate, coriaceous, glabrate and minutely reticulate-veiny on the pale-green upper surface, densely tomentose with a yellowish- or reddish-brown wool on the obscurely veiny lower surface, 3.5–6.5 cm. long and 2–3.5 cm. wide. Inflorescence cauline or axillary, subsessile or on brown-tomentose peduncle up to 5 (or even 13?) mm. long. Bracts linear-lanceolate, acute, 5–6 mm. long. Sepals ovate or oblong-ovate, acute, densely covered with a brown tomentum, about 5 mm. long.[1] Corolla cream-colored, fragrant, tube about 1 cm. long, the oblong-ovate lobes one third as long. Fertile stamens two-thirds or fully the length of corolla-tube; anthers oblong-linear, about 3 mm. long. Ovary hirsute, style and capitate stigma reaching to top of corolla-tube. Capsule unknown.

Type specimen: Collected by *Rock & Nevin*, No. 6,183, along the beach on the windward side of the island, within the spray of the sea, between Kalawao and Waikolu, Island of Molokai, March 26, 1910 (Bish.).

Distribution: Known only from type locality on northern coast of Molokai.

Specimens examined: *Rock & Nevin* 6,183 (cotype, Bish.).

The slightly revolute leaf-margins, so common in *Pittosporum*, are especially noticeable in this species because of the sharp color-contrast between the brown- or reddish-brown-tomentose lower leaf-surface and the rolled-back pale-green glabrate edges of the upper surface. The inflorescence is described by Rock as "cauline immediately under the leaves." The two inflorescences present on the cotype examined are, however, well up among the leaves and are what most authors would term axillary. These are very short-pedunculate, but lower down are several old, barren, twig-like branchlets that may well have been peduncles of a previous year. These are suberect and about 10–13 mm. long. The species, in the words of Rock, "is exceedingly interesting as it represents the only litoral species from the [Hawaiian] islands."

Rock originally, in his herbarium determination, named the type material of this species *Pittosporum halophilum*. This was, of course, an appropriate name, in view of the fact that the type (see above) had grown "within the spray of the sea." The trivial name was unaccountably altered to the meaningless or at least misleading spelling, *halophylum*, when published. In the interests of orthographic accuracy, it has recently been corrected to *P. halophilum* (Amer. Journ. Bot. 28: 18. 1941).

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[1] Rock describes the tomentum as yellow or yellowish ("flavido") but in the dried cotype specimen before me it is the same color as I have treated throughout as brown.

13. **Pittosporum cladanthum** Sherff, Amer. Journ. Bot. 28: 21. 1941; *Pittosporum cauliflorum* var. *fulvum* Hillebr. Fl. Haw. Isls. 25. 1888; *Pittosporum cauliflorum* var. *macrophyllum* Skottsb. Meddel. Göteb. Bot. Trädgård 10: 109. 1936.

a. Leaf-blades mostly 1.2–2.3 dm. long, their veins moderately salient and delicate beneath; native of Oahu. *P. cladanthum* sensu stricto.

a. Leaf-blades mostly 0.6–1.4 dm. long.

  b. Their veins somewhat incrassate and conspicuously salient beneath; seeds 6.5–7.5 mm. long; native of Oahu. var. γ *reticulatum.*

  b. Their veins delicate and moderately salient beneath; seeds 5–6 mm. long; native of Lanai............. var. β *gracilipes.*

A tree 3–6 or sometimes even 9 meters tall. Leaves narrowly to subbroadly obovate, often very large, blade up to 2.5 dm. long and 9 cm. wide, petiole up to 5.5 cm. long, lower surface salient-veiny and more or less reddish- or more often brownish-tomentose; young shoots conspicuously and densely brownish- or reddish-tomentose throughout. In floral characters apparently similar to *P. cauliflorum* but the fruiting peduncles often 1–4 cm. long and sometimes finally 7 mm. thick. Capsules rugose or rough-tuberculate but less so than in var. *reticulatum*, the mature valves flattening to an obovate or barely ovate or oblong shape, 2–2.7 cm. long exclusive of short stylar beak and 2.1–2.6 cm. wide, pedicels mostly 2–8 mm. long; seeds smoothish, 7–9 mm. long.

Type specimen: Since the name *P. cladanthum* was founded directly on the material commonly referred to *P. cauliflorum* var. *fulvum* Hillebr., the types might reasonably be expected to be the same. The type of *P. cauliflorum* var. *fulvum* was collected by *William Hillebrand* on Oahu (Berl.). It is at present inaccessible for study. Hillebrand gave the distributional range as "Ewa to Waialua." His specimen No. 302 at Kew came from Waiawa Valley of the Koolau Range, Oahu. This lacks fruits, but in leaves is typical for the many rough-fruited specimens that pass in herbaria for var. *fulvum* Hillebr. or its synonym, var. *macrophyllum* Skottsb.

Hillebrand, however, had seen no fruits of his var. *fulvum* anyway, as he stated in his text. It is conceivable that his Waiawa Valley specimen, which had been collected many years before the publication of his var. *fulvum*[1] was actually of the smoother-fruited form collected by *Christophersen, Wilder, & Hume*, No. 1,577, at Puu Kapu, and referred by me to the very rare *P. cauliflorum* var. *cladanthoides* (*qu. v.*). There is no doubt, however, that when Hillebrand gave the comprehensive range "Ewa to Waialua" for his var. *fulvum* he referred principally to the common form having rough or lumpy fruits, these often somewhat ridged or shallowly crested lengthwise along the median line of each valve. But because of the technical even though slight uncertainty that must always attach to the precise type basis of the var. *fulvum*, I have chosen to describe *P. cladanthum* anew upon its own independent type basis. The specimen selected as the type is *Degener, Park, Potter, Bush, & Topping* 10,986, in rain-forest, Malaekahana Trail, Laie, Island of Oahu, July 29, 1935 (Field, 2 sheets).

Distribution: Island of Oahu.

Specimens examined: *Edwin H. Bryan, Jr.*, Aiea, June 5, 1920 (Field); *Bryan*, alt. 1,200 feet, lower west ridge, Kaipapau Valley, July 11, 1920 (Bish.; Field); *Bryan*, trees, 3–4 meters tall, at lower edge of lower forest at transition with guava-lantana vegetation, Hauula Forest Reserve, Punaiki Trail, behind Hauula, May, 1933 (Field); *Erling Christophersen* 1,384, tree, 5–6 meters tall, in forest, alt. ±200 meters, Pupukea-Kahuku Trail, Koolau Range, August 12, 1930 (Bish.; Field); *Otto Degener* 13,002, in forest, Oio-Paumalu Trail, June 16, 1940 (Deg.; Field); *Degener* 13,003, in forest, Waipilopilo, Hauula, June 11, 1940 (Berl.; Deg.; Field, 2 sheets); *Degener & Gordon Dowson* 12,926, among bushes, Papali Gulch, Hauula, September 8, 1940 (Berl.; Deg.; Field); *Degener & Emilio Ordoñez* 12,204, in open forest, Waimea Valley, July 24, 1938 (Deg.; Field, 2 sheets); *Degener & Ordoñez* 12,576, flower-buds observed several nodes below ripe fruit, in lower forest, Pupukea-Kahuku, December 14, 1939 (Field); *Degener, Ordoñez, & John Foster* 12,297, in lower rain-forest, north rim of Kaluanui Valley, March 18, 1939 (Berl.; Field, 2 sheets; also a score or more additional, unmounted sprays, as yet undistributed; some typical, some approaching *P. sulcatum* as to smaller leaves, these finally glabrate); *Degener & Kwan Kee Park* 10,985, in forest, east ridge of Kaipapau Valley, July 7, 1935

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[1] A separate label at Kew states that the plant was received at Kew in July, 1865.

(Berl.; Deg.; Field); *Degener & Park* 10,997, in forest, Aiea Ridge, September 4, 1932 (Field, 2 sheets); *Degener & Park* 11,000, on dry, exposed slope, southeast side of Makua Valley near its head, January 3, 1935 (Berl.; Deg.; Field); *Degener, Park, & Manuel Kwon* 11,002, in forest, Pupukea-Kahuku region, January 24, 1932 (Deg.; Field); *Degener, Park, Potter, Bush, & Topping* 10,806, in forest, Malaekahana Trail, Laie, July 29, 1935 (Deg.); *iidem* 10,986 (type, Field, 2 sheets: cotype, Deg.); *Degener, Park, Potter, & Gordon Shigeura* 10,809, in forest, Waimalu Gulch, November 3, 1935 (Deg.; N.Y.); *Degener, Topping, Martinez, & Salucop* 11,137, Puulupe Trail, Kawailoa, February 25, 1937 (Berl.; Deg.; Field, 3 sheets; Gray; Kew); *Charles N. Forbes*, Makaha Valley, Koolau Range, February 12–19, 1909 (Mo.); *Forbes (with Dean Lake)* 1,993-*O*, Waimano Valley, October 27–30, 1914 (Bish.; Mo.); *Forbes* 2,053-*O*, on ridge north of Waimea Valley, February 10–13, 1915 (Bish.); *F. R. Fosberg* 9,439, bush, 3 meters tall, in moist forest, alt. 400 meters, Laie-Malaekahana Ridge, Koolau Mts., April 15, 1933 (Berl.; Bish.; Field, 2 sheets); *Fosberg* 10,357, bush, 3 meters tall, in dry forest, alt. 350 meters, on ridge "southeast Makua Gulch," Koolau Mts., Hauula, October 15, 1933 (Bish.; Field, 2 sheets); *Fosberg* 12,360, tree, 5 meters tall, alt. 500 meters, on dry, wooded ridge, south side of Makua Valley, Waianae Mts., November 17, 1935 (Field); *Edward Y. Hosaka* 113, in woods, alt. 1,800 feet, Pupukea, Paumalu Forest Reserve, Koolau Mts., January 12, 1930 (Bish.); *Hosaka* 770, tree, 20 feet tall, in moderately dry place, alt. 700 feet, 2nd north fork, Kipapa Gulch, Koolau Range, September 25, 1932 (Field); *Hosaka* 979, tree, 30 feet tall, in lower wooded forest, alt. 1,000 feet, Kipapa Gulch, April 30, 1933 (Field); *Edward P. Hume* 82, alt. 425 meters, Kipapa, February 15, 1931 (Bish.); *Hume* 451, tree, on sparsely wooded slope, alt. 1,000 feet, Kalauao Gulch, Aiea, Koolau Range, January 3, 1932 (Field); *Charles S. Judd* 19, erect tree, 3 meters tall, alt. 225 meters, dry gulch side, Pupukea, September 28, 1925 (Bish.; *pro var. nova a F. Brownio acceptum*); *Judd* 69, Hawaiian Islands, 1928 (Bish.); *Noel Krauss*, alt. 400–600 feet, Waipilopilo Gulch, Hauula, December 2, 1933 (Field); *Alfred Meebold*, alt. 3,000 feet, Makaleha Ridge, Kaala, Waianae Mts., June, 1932 (Bish.); *Meebold*, Waiahole ditch trail, June, 1932 (Bish.); *Meebold (Otto Degener distrib. No.)* 10,800, Paumalu, November, 1935 (Deg.); *Richard Onouye*, small tree, about 18 feet tall, in rain-forest, alt. 1,800 feet, on Maakua-Papali Ridge, Kaipapau Forest Reserve, Hauula, October 15, 1933 (Bish.); *Rock & Swezey* 4,813, Valley of Niu, August 22, 1909 (Arn.); *Harold Saint John* 10,140, flowers white, sweetly fragrant, on wooded ridge, alt. 1,100 feet, Pupukea-Paumalu Forest Reserve, January 12, 1930 (Field); *Carl Skottsberg* 1,792, in Pupukea Forest Reserve, Pupukea-Malaekahana Trail, September 15, 1926 (type, Bish., and cotype, Goth., of *P. cauliflorum* var. *macrophyllum* Skottsb.); *Otto H. Swezey,* Ewa, January, 1913 (Gray); *David L. Topping* 2,925, along Pupukea-Kahuku Trail, November 23, 1924 (Deg.); *E. K. Yoshinaga,* Pupukea, January 12, 1930 (Bish.); *T. G. Yuncker* 3,018, on ridge trail back of Aiea, September 4, 1932 (Yuncker).

As *Pittosporum cladanthum* represents a segregation of several formerly so-called varieties of *P. cauliflorum* from that species, it may be well to review here briefly the historical setting of those varieties. Hillebrand (Fl. Haw. Isls. 25. 1888) described three varieties of *P. cauliflorum,* namely, var. β *fulvum,* var. γ (without name), and var. δ *flocculosum,* in the order here given. Var. *fulvum,* described as extending in range from Ewa to Waialua, Oahu, is represented by Hillebrand 302, from Waiawa Valley of the Koolau Range, Oahu, a specimen at Kew (as well, doubtless, as one or more specimens at Berlin, but which I have not as yet examined). This lacks flowers and fruits. The leaf-blades are broadly oblanceolate and range to about 10.5 cm. long and 4 cm. wide. The petioles are 1.5 to 2.5 cm. long. The under surfaces of the leaves are densely covered with a reddish-brown tomentum except in a few small areas where this has sloughed off. The principal lateral veins are moderately visible beneath through the tomentum. An examination of a wide range of specimens from Oahu shows that *P. cauliflorum* var. *macrophyllum* Skottsb. is to be referred here. The var. *macrophyllum* had large leaves, excessively dense, brown or reddish-brown tomentum that covered the young leaves and their subtending branchlets, also tomentose, rough, subpedicellate capsules clustered mostly in threes on a peduncle about 1 cm. long. It evidently had been segregated by Skottsberg as a variety because of its large leaves, but the leaf-size varies too much to permit of separation from var. *fulvum.*[1]

Recently (*cf.* Amer. Journ. Bot. 28: 21. 1941; also see above under *P. cauliflorum,* p. 521), on finding that this var. *fulvum* was to be elevated to separate specific rank because of its rugose fruits, I renamed it *Pittosporum cladanthum* (*qu. v.*).

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[1] Described by Hillebrand without special mention of leaf-size and thus assumedly similar in this respect to the species proper, with leaves described by Hillebrand as "6–8 inches × 2–3 inches." It is significant that for Hillebrand's var. γ, a form with usually smaller leaves, he did not omit the leaf-size, describing it as "4–6 inches × 2–2½ inches."

Var. γ was cited first from Mt. Kaala, Oahu. The leaves were said by Hillebrand to be "brownish-tomentose as in var. β, but strongly nerved underneath." Hillebrand had seen no capsules for his var. *fulvum* and it seems that he likewise had seen none for his var. γ. For each he gave a few supplementary characters but these appear to have been drawn from inflorescences of different sexes and perhaps different stages of maturity. However, Skottsberg (Meddel. Göteb. Bot. Trädgård 10: 109. 1936) has accepted Hillebrand's var. γ and named it *reticulatum;* this is the *P. cladanthum* var. *reticulatum* of my treatment below. Like "var. *fulvum,*" var. *reticulatum* has the young leaves and their subtending branchlets densely brownish- or reddish-brown-tomentose, these thus presenting a strong contrast to the lower, older, and larger leaves, which are green and glabrous or glabrate on their upper surfaces. Var. *reticulatum* simulates strongly *P. confertiflorum* var. *Mannii,* from which it seems consistently to differ, however, in lacking a terminal inflorescence.

Var. δ *flocculosum* was based on material from Kaala, Oahu, and is easily recognized by the "pale strigose pubescence in flakes or patches" on the lower surfaces of the leaves. A comparison of this strigose pubescence with the tomentum on the leaves of *P. cauliflorum* indicates that the two forms are specifically distinct (see *P. flocculosum*).

Pittosporum cladanthum var. β **gracilipes** Sherff, Field Mus. Bot. Ser. 22: 427. 1941.

Similar in size of the thin, obovate or spatulate-obovate leaves to var. *reticulatum* but in their veins and pubescence to *P. cladanthum* proper; blade 6–12 cm. long and 2.5–5 cm. wide. Flowers (many pistillate ones seen) short, sessile, in a slenderly pedunculate inflorescence, peduncle 1–1.7 cm. long and at first scarcely 1 (but finally ±4) mm. thick; sepals acute; corolla only about 6–7 mm. long including the terminal portion (this dilated, subrotund, ±2.5 mm. long) of the separate petals. Capsule (a single mature one seen) moderately rugose, densely tomentulose, about 2 cm. long (beak excluded) and scarcely 1.8 cm. wide; seeds about 5–6 mm. long.

Type specimen: Collected by *Charles N. Forbes,* No. 380-*L,* on Island of Lanai, September, 1917 (Bish.).

Distribution: Island of Lanai.

Specimens examined: *Forbes* 380-*L* (type, Bish.: cotypes, Berl.; Field).

In Hillebrand's highly generalized key (Fl. Haw. Isls. 22. 1888) the type collection would run to *P. Terminalioides* and it may be remarked that Hillebrand (p. 24) thought of that species as occurring partly on Lanai. However, the foliar habit, particularly as to the densely velvety-fuzzy young leaves, seems to suggest closer affinities with *P. cladanthum*.

Pittosporum cladanthum var. γ **reticulatum** (Skottsb.) Sherff, Amer. Journ. Bot. 28: 23. 1941; *Pittosporum cauliflorum* var. γ Hillebr. Fl. Haw. Isls. 25. 1888; *Pittosporum cauliflorum* var. *reticulatum* Skottsb. Meddel. Göteb. Bot. Trädg. 10: 109. 1936.

Leaves narrowly obovate to oblong-obovate, blade commonly 8–15 cm. long and 2.5–6 cm. wide, apically subrotund to abruptly short-acuminate, strongly areolate above, salient-venose and conspicuously brownish- or reddish-brown-tomentose beneath, petiole usually 1.5–2.5 cm. long. Capsule 2–2.5 cm. long, densely short-tomentose or finally glabrate, transversely more or less waved and grooved but not sharply ridged, subsessile or on pedicel up to 7 mm. long, more or less obovate when flattened out in age. Seeds 7–9 mm. long, smoothish.

Type specimen: Collected by *William Hillebrand*, on Mt. Kaala, Island of Oahu (Berl.).

Distribution: Island of Oahu.

Specimens examined: *H. F. Bergman*, in moist woods, alt. 3,100 feet, north side of Kaala, February 11, 1928 (Berl.; Bish.; Field); *Erling Christophersen, Gerrit P. Wilder, and Edward P. Hume* 1,511, in forest, alt. 450–600 meters, Kuliouou, February 5, 1931 (Berl.; Bish.; Field; Par.); *Otto Degener* 13,007, in forest, on summit ridge between Puu Kanehoa and Puu Kaua, June 23, 1940 (Berl.; Deg.; Field); *Degener, Ordoñez, & Foster* 12,333, on cloudy summit, Puu Hapapa, May 7, 1939 (Field); *iidem* 12,359, in shrubby forest near top, southeast slope of Puu Hapapa, June 4, 1939 (Berl.; Deg.; Field); *Degener, Ordoñez, & Kepaa* 12,737, fruit about 2 feet below branch tip and rarely at tip,[1] on forested slope at summit, northeast ridge of Puu Kanehoa, March 31, 1940 (Berl.; Deg.; Field); *iidem* 12,811, same locality, near top of ridge, April 14, 1940 (Berl.; Deg.; Field; a rather puzzling form with foliage of var. *reticulatum* but with a few capsules in age much smoother as in var. *fulvoides*); *Degener, Park, Shigeura, & Takamoto* 10,807, in summit-forest, between Palehua and Palikea, December 16, 1935 (Berl.; Deg.;

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[1] On separate slip, Mr. Degener writes: "I would not be surprised if fruit is merely ±terminal due to bud injury."

Field); *Degener, Park, & Topping* 10,808, near summit-ridge, Kuliouou Valley, June 23, 1935 (Deg.; Field); *Charles N. Forbes*, Kaala Mts., Makaha Valley, February 12–19, 1909 (Bish.; Field); *F. R. Fosberg* 10,970, tree, 5 meters tall, on wet, wooded ridge, alt. 800 meters, above Kupehau, Waianae Mts., Honouliuli, June 30, 1935 (Field); *Alfred Meebold* (*Otto Degener distrib. No.*) 10,804, Paumalu, October, 1935 (Deg.); *Meebold* (*Degener distrib. No.*) 10,805, Makaleha Valley, December, 1935 (Deg.; N.Y.); *Joseph F. Rock* 170 *pro parte*, Punaluu Mts., December 3–14, 1908 (Bish.; leaves smaller, blades 6–9 cm. long and mostly 2.5–3.3 cm. wide); *Rock & Agee* 17,027, Waiawa Gulch, December, 1919 (Arn.); *Harold Saint John* 12,198, shrubs, 15 feet tall, in thickets, alt. 2,800 feet, on upper ridges, Puu Kaua, Waianae Mts., November 6, 1932 (Field); *Carl Skottsberg* 272, alt. about 600 meters, Palehua, Waianae, August 23, 1922 (Goth.); *Otto H. Swezey*, Waiahole, September, 1916 (Bish.).

Hillebrand (Fl. Haw. Isls. 25. 1888) cited both Oahu and Kauai for this variety, the latter island on the strength of Gray's cited locality for Gray's *Pittosporum Terminalioides* var. β (Bot. U. S. Explor. Exped. 231. 1854), which Hillebrand considered synonymous. The type of *P. Terminalioides* var. β Gray is still extant (U.S. Nat. Herb.). It has leaves broadly oblanceolate, definitely acuminate, blades 10–18 cm. long, petioles ±1.5 cm. long. It lacks flowers and fruits. It seems closer to *P. cladanthum* var. *reticulatum* than to the allied species *P. Gayanum*, but with the materials at present accessible cannot be positively referred to either.

Skottsberg (*loc. cit.*), while citing his No. 272 as a specimen, nevertheless published the name *reticulatum* definitely as a *nomen novum* for Hillebrand's var. γ of *P. cauliflorum* Mann.

14. **Pittosporum Gayanum** Rock, Indig. Trees Haw. Isls. 166, pl. 61. 1913.

Leaves when young covered on both surfaces with dark-brown or reddish-brown tomentum, in age remaining more or less tomentose beneath........................*P. Gayanum* sensu stricto.

Leaves entirely glabrous even when young........var. β *waialealae.*

Small tree or tall shrub, 4.5–5.5 meters tall, with round, spreading crown or, when growing on the high central plateau near Waialeale in the dense rain-forest, a tree with very few straight, ascending branches. Leaves crowded at ends of branches or scattered, obovate-oblong or less often a few obovate, shortly acuminate at apex, more or less revolute at margins, conspicuously reticulate with veins depressed above and salient beneath, when young covered on both surfaces with dark-brown or reddish-brown tomentum, at maturity becoming glabrous or glabrate above but only in irregular patches so beneath, the blades mostly 1–2.5 dm. long and 4–10 cm. wide, the petioles somewhat margined and about 1.5–2.5 cm. long. Inflorescence axillary and cauline, peduncle short, ±1.2 cm. long, with dark-reddish-brown tomentum, bracteate with tomentose and linear- or lanceolate-subulate bracts; pedicels 5–10 mm. long, flowers fragrant; sepals 3 mm. long; corolla cream-colored, its tube about 1 cm. and lobes about 4 mm. long; stamens equaling corolla-tube, anthers oblong; ovary tomentose, one-third as long as the exserted style; capsule ovoid to cordiform, pointed, densely covered with dark-reddish-brown tomentum, about 2 cm. or more in diameter, the valves rugose and scrobiculate; seeds angular, shining-black, smooth, about 5 mm. long.

Type specimen: Collected by *Joseph F. Rock*, No. 8,867, on the high plateau of Kauai, October, 1911 (Bish.).

Distribution: Island of Kauai. Rock (*loc. cit.*) writes: "This very interesting tree is peculiar to the interior, high plateau of Kauai, especially the upper slopes of Waialeale. It grows in the swamps and swampy forests as well as along streambeds several miles inland from Kaholuamano [Kaholuamanu], at an elevation of 4,800 to 5,000 feet. It is not uncommon in the more open flat swamps in company with the thousands of *Lobelia macrostachys* at this region, which is constantly wrapped in clouds .... It is a constant species and grows all over the summit of Kauai."

Specimens examined: *Lucy M. Cranwell & Carl Skottsberg* 2,868*b*, Kilohana, Alakai, August 16, 1938 (Goth.); *Cranwell, Olof H. Selling, & Skottsberg* 3,727, Kawaia Trail, Kohua Ridge, region below Alakai, August 19, 1938 (Goth.); *Otto Degener* 10,995, in open place, Waineke Swamp, June 28, 1926 (Field); *Degener* 10,996, in forest, same locality, July 1, 1926 (Berl.; Field); *Charles N. Forbes* 258-*K*, Wahiawa Mts., August, 1909 (Berl.; Bish.; Field); *Forbes* 919-*K*, Waimea Drainage Basin, west side, July 3–August 18, 1917 (Bish.); *F. R. Fosberg* 12,677, shrub, 5 meters tall, flowers white and fragrant, alt. 1,250 meters, in wet forest, plateau at head of Kalalau Valley, December 29, 1935 (Field, 2 sheets); *Albert S. Hitchcock* 15,497, alt. 3,600–5,080 feet, Waialeale, October 22–24, 1916 (U.S.); *Joseph F. Rock* 18 (5,481), small tree or shrub, high plateau, September 24, 1909 (Bish.; Field); *Rock* 18 (6,072), trail to Alakai Swamp, October 14, 1909 (Field); *Rock* 18 (6,074), a small tree on rather exposed places, alt. 4,500 feet, same place and date (Berl.); *Rock* 18 (6,078), on trail to Alakai Swamp, October 14, 1909 (Field); *Rock* 6,071, Alakai Swamp, October, 1909 (N.Y.); *Rock* 8,867 (Gray, 2 cotype sheets); *Rock* 17,282, Isl. Kauai (Bish.); *Saint John, Hosaka, Hume et alii* 10,764, alt. 3,500–4,023 feet, northwest end of Alakai Swamp, December 27, 1930 (Bish.; Field); *Olof H. Selling* 2,868, Kilohana, Alakai, August 13, 1938 (Goth.); *Skottsberg* 979, between Kokee and Kilohana, October 27, 1922 (Goth.).

Pittosporum Gayanum var. β **waialealae** Rock, *loc. cit.*

Leaves whorled at ends of branches, glabrous even when young, blade only 5–10 cm. long and 2–3.5 cm. wide, petiole about 1 cm. long. Peduncle sparsely and pedicels subsparsely hispidulous at least in young-fruiting stage; capsules brown-tomentose when young, deeply scrobiculate but glabrous when mature, 2 cm. in each direction.

Type specimen: Collected by *Joseph F. Rock*, No. 8,866, a shrub 5 feet tall, in the open bog, alt. 5,200 feet, at the very summit of Waialeale, Island of Kauai, October 20, 1911 (Bish.).[1]

Distribution: Known only from type locality on the Island of Kauai.

Specimens examined: *Rock* 8,866 (cotypes, Arn.; Gray).

15. **Pittosporum flocculosum** (Hillebr.) Sherff, Amer. Journ. Bot. 28: 23. 1941; *Pittosporum cauliflorum* var. *flocculosum* Hillebr. Fl. Haw. Isls. 25. 1888.

A bush or small tree, up to ±10.5 meters tall. Leaves mostly clustered at ends of branches, obovate-oblong, obtuse to somewhat acuminate, thin, smooth and scarcely areolate on upper surface, irregularly clothed on the somewhat saliently venose lower surface, unless in age, with pale, strigose pubescence, this commonly in flakes or patches; blade 1–2.5 dm. long and 4–9.5 cm. wide. Flowers of both sexes axillary or cauline, subsessile and crowded in close heads at ends of peduncles. Bracts 5–6 mm. long. Sepals ovate-obtuse, tomentose, ±3 mm. long. Corolla white, its tube 10–12 mm. long in the sterile and about 8 mm. long in the fertile flowers. Ovary thickly tomentose. Entire fruiting inflorescence (including fruits) highly variable. Capsules now solitary, now 2–8 in a cluster, finally compressed, in outline ovate to oblong or obovate, now erugose or merely papillate, now coarsely rugose; valves 1.5–3.4 cm. long and wide, when rugose sometimes reinforced on outer face with a prominent lengthwise more or less interrupted rib or crest, persistently tomentose or becoming mostly glabrate. Peduncles mostly glabrous, short (1–2 cm.) and thick or elongate (up to 6.5 cm.) and slender; pedicels from thick and ±3 mm. long to slender and up to 2 cm. long, glabrate. Seeds rather thin and flattish, smooth on faces, smooth or smoothish on edges, 6.5–8 mm. long.

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[1] Rock's text says, "Oct. 10, 1911" but his type label at Bishop Museum (*fide* Miss Marie Neal) and his cotype label at Gray Herbarium give October 20, 1911 as the date.

Type specimen: Collected by *William Hillebrand*, on Kaala, Island of Oahu (Berl.).

Distribution: Island of Oahu, also apparently in southeastern Kauai, where represented only by the fruiting specimens (*Faurie* 8) collected at Koloa.

Specimens examined: Oahu.—*Otto Degener, Noel Krauss, & Martin Martinez* 11,019, in forest, Puu Kaupakuhale, October 22, 1936 (Berl.; Deg.; Field, 3 sheets); *Degener, Martinez, & Felix C. Salucop* 11,125, in lower rain-forest, on ridge directly north of Kaala, March 26, 1937 (Berl.; Deg.; Field); *Degener & Emilio Ordoñez* 12,203, slender tree, 35 feet tall, with few horizontal branches, in dark forest, Kaaawa Gulch (north of Kaala), August 2, 1938 (Berl.; Deg.; Field); *Degener, Ordoñez, & John Foster* 12,338, in forest, mauka[1] of Kawaiiki ditch intake, April 30, 1939 (Field, 2 sheets); *Degener, Ordoñez, & Richard Northwood* 12,296, in decadent forest, between Puu Pane and Maili, March 25, 1939 (Field); *Degener, Park, Topping, Bush, & Northwood* 10,999, in forest, gulch north of middle of ridge between Puu Kamaohanui and Puu Pane, January 10, 1932 (Deg.; Field, 2 sheets); *Charles N. Forbes*, Makaha Valley, Koolau Range, February 12–19, 1909 (Bish.; Field); *Forbes* 1,825-*O*, on slopes of Kaala, Mokuleia, April 26–May 16, 1912 (Berl.; Bish.; Field; Mo., 2 sheets); *Forbes* (*with J. C. Bridwell*) 2,462-*O*, on ridge between Niu and Wailupe, April 11, 1917 (Bish.); *F. R. Fosberg & Miss K. Duker* 9,043, bush, 3 meters tall, in dry forest, alt. 500 meters, head of Makua Valley, Makua, Waianae Mts., November 25, 1932 (Field, 2 sheets); *Frank Kitamura*, tree on dry ridge, alt. 2,600 feet, Puu Hapapa, Waianae Mts., January 7, 1934 (Field); *Donald D. Mitchell*, Puu Hapapa, Waianae Mts., October 19, 1930 (Field); *Joseph F. Rock* 17,003, Makaleha Valley, May 2, 1918 (Arn.; Bish.); *Harold Saint John* 14,003, diffuse tree, 20 feet tall, flowers white, near edge of woods, alt. 2,600 feet, main divide northwest of Puu Kanehoa, Waianae Mts., Honouliuli, January 7, 1934 (Bish.; Field).

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[1] *Mauka*, a native Hawaiian term signifying "inland; towards the mountains" (J. W. Coulter, Gazetteer Terr. Haw. 207. 1935).

Kauai.—*Abbé Urbain Faurie* 8, Koloa, December, 1909 (Arn.; Del., 3 sheets; with leaves and mature fruits but without flowers, hence the determination, in the absence of other Kauai material, somewhat uncertain and unsatisfactory).

This species was treated by Hillebrand as a variety of *P. cauliflorum*, but the strigose rather than tomentose pubescence of the lower leaf-surfaces and the glabrous or nearly glabrous fruiting peduncles should separate it specifically from *P. cauliflorum* and varieties. The range of variation in *P. flocculosum* is almost incredible. Without a liberal representation of specimens, one might well mistake two or three extremes of foliage and fruit as connoting distinct varieties or even distinct species. Thus, for example, some specimens have all fruits small, smoothish, and perhaps slender-pedicelled, while some have all fruits large, very rugose or lumpy and ridged, and subsessile. Yet in some cases both types of fruit may occur in the same cluster. In *Degener, Krauss, & Martinez* 11,019, of which I have been permitted through Mr. Degener's generosity to study his entire collection of perhaps thirty specimens, several of the extremes in diagnostic characters are present.

16. **Pittosporum argentifolium** Sherff, Field Mus. Bot. Ser. 22: 424. 1941.

a. Capsules notably rugose or tuberculate; pedicels 3–6 mm. long. var. *β Rockii*.
a. Capsules smoothish (except for pubescence).
  b. Pedicels 3–6 mm. long; lower peduncles 1–2 cm. long. *P. argentifolium* sensu stricto.
  b. Pedicels lacking or rarely to 3 mm. long; lower peduncles usually under 5 mm. long.................... var. *γ sessile*.

Probably a small tree. Leaves disposed subverticillately at and near the tips of the branches, oblong-obovate or -spatulate, somewhat thickish, at apex weakly acuminate, at base narrowed into a slender petiole about 2–3 cm. long, at first (at least on lower face) very densely strigose-tomentose (with brown or silvery hairs), finally on upper surface glabrate and impressed-veiny but on lower surface very densely strigose-tomentose or scurfy-strigose (hairs silvery-white and often partly transformed into a very thin integument) or for a very small part glabrate, blade 1–2.5 dm. long and 3–7 cm. wide. Inflorescences rarely terminal, commonly axillary or variously disposed along branches, tomentose; upper ones sessile, many- (±20-) flowered, axis up to about 1.5 cm. long; lower ones few- (±10-) flowered, pedunculate, the peduncle 1–2 cm. long. Pedicels 3–6 mm. long; bracts linear-subulate, about 7–8 mm. long. Sepals ovate, brown- or yellow-tomentose, ±4 mm. long. Corolla-tube ±6 mm. long. Capsule obcompressed, in outline horizontally oblong, ±2 cm. long and ±2.6 cm. wide; valves externally not or scarcely dorso-depressed, very minutely tomentellous, slightly rugulose (thus strongly similar to the valves of *P. glabrum* var. *spathulatum*).

Type specimen: Collected by *Joseph F. Rock*, No. 8,656, Auahi (Auwahi), East Maui, November, 1910 (Arn.).

Distribution: East Maui.

Specimens examined: *William Hillebrand* 304, Mt. Haleakala (Kew); *Rock* 8,656 (type, Arn.: cotypes, Arn.; Berl.; Bish.; Field, 2 sheets; Gray).

This is undoubtedly the same plant as that "collected by Lydgate on the south side of Haleakala" and cited by Hillebrand (Fl. Haw. Isls. 27. 1888) for his "β var.? *argenteum*" which he placed under his new *Pittosporum hawaiiense*, described from the forests of Kona and Kohala of the Island of Hawaii. *P. hawaiiense* was the tenth and last species of *Pittosporum* in Hillebrand's text. His ninth species was *P. confertiflorum* Gray, to which this is closer in most respects. In fact, Rock had labeled his collection of No. 8,656 (*i.e.*, the type collection of *P. argentifolium*), *P. confertiflorum* (on label of type in Arn.). Hillebrand, long previous to writing his Flora of the Hawaiian Islands (and at least prior to July, 1865), had likewise labeled his own No. 304 as *P. confertiflorum*.[1] From *P. confertiflorum*, *P. argentifolium* differs at once in its mostly larger leaves and in having the young shoots not conspicuously tawny- or brown-tomentose, but, instead, rather moderately whitish-strigose. The pedicels of *P. argentifolium* are 3–6 not 6–12 mm. long, and the leaves in age have underneath a thinner investiture of pubescence. This consists of hairs that are less curved, more appressed, and at times passing more or less into a membranous scurf that in places may eventually slough away.

Pittosporum argentifolium var. β **Rockii** Sherff, Field Mus. Bot. Ser. 22: 427. 1941.

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[1] That Hillebrand failed to mention his own No. 304 in publishing the name *argenteum* may be explained by the fact that his plant had been sent to the Hooker Herbarium (where it was received in July, 1865, and later accessioned in the Kew Herbarium) and was therefore not on hand.

Differs from the species proper: Capsules coarsely tuberculate or rugose, in outline ovate or cordate-ovate, ±2.3 cm. long and ±2 cm. wide.

Type specimen: Collected by *Joseph F. Rock*, No. 8,610, Ukulele, East Maui, October, 1910 (Arn.).

Distribution: Known definitely only from East Maui.

Specimens examined: *Charles N. Forbes*, mountains above Ukulele (Bish.); *Forbes* 192-*M*, in woods near Ukulele, above Olinda, July, 1910 (Bish.); *Rock*, Haleakala, above Ukulele, September, 1910 (Gray); *Rock* 8,610 (type, Arn.: cotypes, Arn.; Berl.; Bish.; Del.; Field, 2 sheets; N.Y.); *Gerrit P. Wilder*, Maui, 1913 (Bish.).

Rock, for whom this variety was named, had labeled one of his specimens (Herb. Gray) *P. confertiflorum*, a species to which he had referred also, as above seen, specimens of *P. argentifolium* proper. In his Indigenous Trees of the Hawaiian Islands (p. 161. 1913) he states: "The capsules of *P. confertiflorum* from the various localities have all possible shapes and forms, but can not be separated successfully into varieties. It will have to remain a polymorphous species." The specimens of *P. argentifolium* proper all were collected, so far as definitely known, at or near Auwahi, near the west end of the southern slope of Mt. Haleakala, in East Maui. Their capsules are of the smoothish (*i.e.*, not rugose or strongly tuberculate) type such as is found in *P. glabrum* and its var. *spathulatum*. The specimens here segregated as var. *Rockii* came from the other side of the same mountain, at the junction of the northeast and northwest slopes. These have capsules of the rugose or strongly tuberculate type such as is found in *P. sulcatum*. Moreover, the capsules are ovate or cordate-ovate in outline, not, as in the species proper, transversely oblong. It seems that the two sets of plants are varietally different, regardless of whatever polymorphism may be proved to exist among the capsules of true *P. confertiflorum*.[1]

Pittosporum argentifolium var. γ **sessile** Sherff, Field Mus. Bot. Ser. 22: 426. 1941.

Leaves often a little smaller, pubescence of lower surface more scurfy and even similar to a cuticle. Flowers not or very shortly (±2 mm.) pedicellate, peduncle more often short and under 5 mm.

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[1] Rock (*loc. cit.*) omits all mention of *P. hawaiiense* "var. ? *argenteum*" Hillebr., which, as already remarked above, was undoubtedly equivalent to *P. argentifolium* proper. It may therefore be assumed that Rock overlooked the other characters that are associated with those of the capsules in these two endemic groups of specimens, viz., *P. argentifolium* and its var. *Rockii*.

long. Capsular valves finally obcordate, more or less tomentellous, flat or undulate but not strongly rugose or tuberculate.

Type specimen: Collected by *Charles N. Forbes*, No. 2,064-*M*, Pakiloi, south slope of Haleakala, East Maui, March 23, 1920 (Bish.).

Distribution: East Maui.

Specimens examined: *Forbes* 1,786-*M*, Kanaio, south slope of Haleakala, March 1, 1920 (Berl.; Bish.; Del.; Field); *Forbes* 1,964-*M*, Auwahi, south slope of Haleakala, March 14, 1920 (Berl.; Bish.; Field; Gray); *Forbes* 1,981-*M*, south slope of Haleakala, March 15, 1920 (Bish.); *Forbes* 2,052-*M*, flowers cream-white, very fragrant, Auwahi, March 20, 1920 (Berl.; Bish.; Field); *Forbes* 2,062-*M*, Pakiloi, south slope of Haleakala, March 23, 1920 (Bish.); *Forbes* 2,064-*M* (type, Bish.).

Very similar to the species proper, except in its more or less sessile florets and fruits, these clustered on a commonly very short peduncle. Rarely one or two fruiting pedicels have elongated to about 6 mm.

17. **Pittosporum kauaiense** Hillebr. Fl. Haw. Isls. 25. 1888.

a. Upright trees, ±10 dm. tall, trunk ±2.5 dm. thick; leaf-blades mostly 1–2.4 dm. long and 4–7 (–8.5) cm. wide.
  b. Capsules shallowly roughened, their tomentum white (in age somewhat strigose and more or less deciduous). *P. kauaiense* sensu stricto.
  b. Capsules strongly tuberculate-rugose, their fine tomentum (at times absent in age) brown and estrigose. . var. *β phaeocarpum*.
a. More or less acaulescent, the creeping branches about 2–5 mm. thick; leaf-blades 5–8.5 cm. long and 2.5–4.5 cm. wide. var. *γ repens*.

Tree ±10 meters tall, branches spreading, the young shoots strigose with white or perhaps more often brown 1-celled hairs. Leaves chartaceous with nerves usually prominent especially on lower surface; blade dark-green, obovate-oblong, shortly acuminate, more or less glabrate above, white- or brown-strigose beneath or in age glabrate, 1–2.4 dm. long and 4–7 (–8.5) cm. wide; petiole slender, 1–3.5 cm. long. Flowers fragrant and clustered, the sterile chiefly terminal, the fertile axillary or cauline. Axis of inflorescence slender, commonly about 6–8 mm. long, densely and more or less appressedly brownish-pubescent, many-flowered; the linear-subulate bracts ±5 mm. long, brownish-pubescent; pedicels similarly pubescent, slender or subcapillary, up to 7 mm. long. Sepals lanceolate to ovate, acute at apex, pubescent or irregularly glabrate, 1.5–2 mm. long. Corolla cream-colored, small in both sexes, the slender tube 4–7 mm. long, the oblong lobes 2–3 mm. long. Stamens equalling corolla-tube, style a little longer. Capsule subglobose or somewhat cubical, about 1.1–1.5 cm. each way, with 4 deep, lengthwise furrows (two of these containing the sutures along which the valves later part), shallowly roughened, at first tomentose, the white tomentum somewhat strigose and finally more or less deciduous, the stylar beak straight and 3–4 mm. long. Seeds few, with smooth back, 6–8 mm. long.

Type specimen: Collected by *Valdemar Knudsen* in mountains of Waimea, Island of Kauai (Berl.).

Distribution: Western half of Kauai.

Specimens examined: *Abbé Urbain Faurie* 6, alt. 600 meters, Holokele (Olokele), March, 1910 (Arn.; Del.; Par.); *Faurie* 7, alt. 600 meters, Kauhao, February, 1910 (Arn.; Del., 2 sheets); *Charles N. Forbes & Charles Dole* 47, Kalalau Valley, July 17, 1909 (Berl.; Bish.; Field); *Forbes et al.* 77, Kalalau Trail, July 19, 1909 (Bish.); *Amos Arthur Heller* 2,580, alt. about 2,500 feet, on the ridge west of Hanapepe River, July 17, 1895 (Arn.; Berl.; Corn.; Field; Gray; Kew; Minn.; Mo.; N.Y.; Par.; U.S., 2 sheets); *Heller* (similarly) 2,580, on the ridge west of the Hanapepe River, August 22, 1895 (Mo.); *Joseph F. Rock* 2,014, Kopiwai Forest, Halemanu, February 14–26, 1909 (Bish.; Gray, 2 sheets); *Rock* 2,021, Halemanu, February 14–26, 1909 (Arn.).

Hillebrand (*loc. cit.*) described the capsules as "about 6 lines each way with 4 deep longitudinal furrows, tomentose and roughish, but not tuberculate." The specimens by Heller and by Forbes and Dole clearly belong here. Their capsules are young and covered with a dense, close, white tomentum, this appearing strigose here and there. They are not tuberculate. In certain material with mature capsules (*e.g.*, Rock 2,014) the capsules are likewise not tuberculate or wrinkled but are glabrate.

Rock (Indig. Trees Haw. Isls. 171. 1913) referred to this species trees that had been observed by him at Olokele Canyon and at Makaweli (both localities on Kauai). He noted that they differed from the type in having wrinkled capsules but stated that they were "otherwise the same." Rock's specimens, however, are seen to possess a brownish or brown, not or but slightly and irregularly white, tomentum covering their capsules, which are rougher or even tuberculate. Moreover, their young leaves and branches are much more conspicuously tomentose and with a tomentum not only denser but darker, usually a cinnamon-brown. His Olokele and Makaweli plants are referred to the following variety.

Pittosporum kauaiense var. β **phaeocarpum** Sherff, Amer. Journ. Bot. 28: 19. 1941.

Branchlets and youngest leaves conspicuously brown-tomentose, leaves finally (sometimes tardily, even above) more or less glabrate. Capsule ±1.6 cm. long and thick, strongly tuberculate-rugose, densely and shortly brown-tomentulose, finally at times more or less glabrate and dull-black.

Type specimen: Collected by *Joseph F. Rock*, No. 5,872, in woods of Makaweli, southwestern Kauai, September 28, 1909 (Gray).

Distribution: Western and north-central Kauai.

Specimens examined: *Otto Degener* 10,990, in forest, north of Wahiawa, June 20, 1926 (Field); *Charles N. Forbes* 117-*K*, Waioli Valley, August 2, 1909 (Field); *Forbes* 828-*K*, Waimea Drainage Basin, West Side, July 3–August 18, 1917 (Bish., 2 sheets); *Forbes* 988-*K*, same place and date (Bish.; Field); *Joseph F. Rock* 14 (5,827), in woods above Makaweli, September 28, 1909 (Bish.); *Rock* 17 (2,023), Halemanu, February 14–26, 1909 (Field); *Rock* 5,803, Olokele Canyon, September 30, 1909 (Bish.); *Rock* 5,805, in woods back of Makaweli, September, 1909 (Arn.); *Rock* 5,872 (type, Gray: cotypes, Bish.; N.Y.);[1] *Rock* 5,874, in woods above Makaweli, September 28, 1909 (Arn.); *Rock* 6,080. Halemanu Mt., October 14, 1909 (Bish.); *Harold Saint John* 13,809, slender, bushy tree, 20 feet tall, alt. 3,700 feet, in moist forest, Kumuweia Ridge, Waimea, December 28, 1933 (Bish.; Field); *Carl Skottsberg* 1,008, in forest around Kokee, October 28, 1922 (Bish.; Goth.).

Rock (*loc. cit.*) describes *Pittosporum kauaiense* as "one of the tallest species of *Pittosporum,* reaching a height of 30 to 40 feet, with a trunk of about 10 inches in diameter, which is vested in a smooth whitish bark." Since, however, Rock's observations were based primarily upon material segregated here as var. *phaeocarpum,* it would be advisable to re-examine living trees and compare the variety with the species proper as to height, diameter of trunk, nature of bark, etc.

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[1] Label for Rock 5,872 on type sheet at Gray Herbarium gives "woods of Makaweli," but the label on cotype sheet at Bishop Museum gives "woods above Makaweli," and, on cotype sheet at New York Botanical Garden, merely "Makaweli."

An apparent hybrid of var. *phaeocarpum* with *P. acuminatum* was collected by C. N. Forbes (No. 837-*K*) in Waimea Drainage Basin, west side, Isl. Kauai, July 3 to August 18, 1917 (Bish.). The three old leaves preserved are oblong-obovate, glabrous or glabrate on both surfaces, impressed-veiny above and salient-veiny below, and measure 2.5–3 dm. long and 7.5–8 cm. wide. The three fruiting peduncles observed are axillary, slender, brown-tomentulose, 3–3.5 cm. long, and bear or have borne 1–5 pedicels each, these brown-tomentulose and about 5–6 mm. long. The seven mature capsules remaining are quadrate-globose, ±1.3 cm. long excluding the slender stylar beak, rugose and densely brown-tomentulose, have somewhat cordate valves, and are not much different from those of either supposed parent. Another specimen, doubtless similarly derived, is A. S. Hitchcock 15,553, vicinity of Kaholuamanu, October 26, 1916 (U.S.).

For other remarks on var. *phaeocarpum* see under species proper.

Pittosporum kauaiense var. γ **repens** Sherff, Amer. Journ. Bot. 28: 19. 1941.

More or less ecaulescent, branches slender (±2–5 mm. thick), elongate, creeping, at first densely appressed-hispidulous finally glabrate and turning gray-white. Leaves obovate, membranaceous, on upper surface presently glabrous but underneath more or less permanently covered with a scurfy-floccose or -strigose, exceedingly thin coating; blade 5–8.5 cm. long and 2.5–4.5 cm. wide, apically obtuse; petiole slender, under 1.7 cm. long. Flowers immature, sepals lanceolate and pubescent. Ovary (mature capsule unknown) 8–10 mm. long and wide, rough, moderately or in small patches sparsely white-pubescent.

Type specimen: Collected by *Reverend John M. Lydgate*, No. 3, in Olokele Valley, Island of Kauai, January, 1912 (Bish.).

Distribution: Known only from type locality in southwestern Kauai.

Specimens examined: *Lydgate* 3 (type, Bish.).

Rock (Indig. Trees Haw. Isls. 171. 1913) failed to mention this variety; whether because he was unfamiliar with it or because, not being really a tree, it did not come within the scope of his book, I cannot say. However, Hillebrand was evidently aware of it through a specimen collected by Valdemar Knudsen. Hillebrand (Fl. Haw.

Isls. 25. 1888) cited Knudsen 157, which had been labeled, "stemless, with creeping branches." He described these as "slender and straggling, the leaves glabrate." The specimen, according to Hillebrand, "offers an analogon to the varieties β and ε of *Metrosideros polymorpha*" listed in his text. If it be borne in mind that Hillebrand (*op. cit.* 126) was very emphatic in regarding his proposed varieties of *Metrosideros polymorpha* as definite and valid entities, it may well be supposed that with more complete material at hand he would have ventured to designate the Knudsen plant as a distinct variety.

Three immature capsules are on the type, placed about 6 dm. back from the tip of one branch. The leaves are brownish-green above and grayish beneath. They appear glabrate as described by Hillebrand, but a careful inspection with the lens reveals the lower surface to be coated with a very thin, silvery-grayish, skin-like or scurfy investiture in which the appressed setulae are here and there with difficulty evident. In a very few small spots this investiture has sloughed away.

18. **Pittosporum napaliense** Sherff, Field Mus. Bot. Ser. 22: 419. 1941.

Tree ±6.5 meters tall, stem ±2 dm. thick. Leaves large and few, alternate or more often subverticillately disposed at or near tips of branches, slenderly petiolate, petiole 2–5.5 cm. long; blade now oblanceolate-oblong now widely obovate-oblong, at apex obtuse or shortly subacuminate, at base cuneate, submembranaceous, above coriaceous often glossy presently glabrous and pallid with veins not conspicuously impressed, below appressed-setose or scurfy-strigose with sharp and silvery-whitish setae but finally more or less glabrate, more often 1.5–2 dm. long and 5–8.5 cm. wide. Inflorescence subumbelliform, now terminal now axillary or cauline, densely tomentose, peduncle commonly 1–3 (more rarely up to 5) cm. long. Flowers numerous (often 20–30), pedicels 3–7 mm. long. Bracts now ovate-lanceolate now lanceolate-linear, 4–8 mm. long. Sepals tomentose, widely ovate, obtuse at apex, 4–5.5 mm. long. Corolla glabrous, tube only about 7–8 mm. long; lobes spreading, ovate, ±5 mm. long. Ovary narrowly ovate, densely tomentose, 3–4 mm. long, subequal to style in length, glabrous near apex. Stamens: sterile about 3–3.5 mm. long, fertile unknown. Capsule only about 1.5 cm. long (excluding the slender style, this about 3.5 mm. long) and wide, moderately obcompressed, at both ends truncate or subcordate, clothed with dense short gray-brown tomentum or finally irregularly glabrescent and darkening. Seeds glossy-black, irregularly angulate, 5.5–6.5 mm. long.

Type specimen: Collected by *Harold Saint John & F. R. Fosberg*, No. 13,864, tree, 20 feet tall, trunk 8 inches in diameter, leaves firm, clear-green above, silvery-green beneath, common in moist woods, alt. 500 feet, Hanakapiai, Hoolulu Stream, Napali District, Island of Kauai, December 30, 1933 (Bish.).

Distribution: Known only from District of Napali, northwestern Kauai.

Specimens examined: *Otto Degener & Emilio Ordoñez* 12,616, forest tree, 20 feet tall, Hanakoa, Napali Coast, December 24, 1939 (Berl.; Deg.; Field, 3 sheets); *Saint John & Fosberg* 13,864 (type, Bish.: cotypes, Berl.; Field, 2 sheets; Kew).

Easily recognized by its large, thinnish leaves, which are more or less whitish-strigose beneath, its proportionately large calyces or small corollas, and its small capsules. These last are somewhat tuberculate-rugose if and when they shed their tomentum, but do not become deeply grooved; their valves finally with at most a shallow, median, lengthwise furrow.

19. **Pittosporum insigne** Hillebr. Fl. Haw. Isls. 25. 1888; Rock, Indig. Trees Haw. Isls. 169, pl. 62. 1913.

a. Flowers small, corolla-tube 6–7 mm. long, -lobes about 2–2.5 mm. long; native of southwestern East Maui. . . . var. γ *micranthum.*

a. Flowers larger, corolla-tube ±10 mm. long, -lobes ±6 mm. long.

b. Capsules usually only slightly rugose, leaf-blades up to 1.9 dm. long and to 5 or even 7 cm. wide; native of eastern Molokai. var. δ *Hillebrandii.*

b. Capsules commonly very rugose.

c. Peduncles up to 1.5 cm. long.

d. Leaf-blade 5–8 (more rarely up to 12) cm. long and 2–4.5 cm. wide; native of Maui. . . . . . . *P. insigne* sensu stricto.

d. Leaf-blade commonly 10–17 cm. long and usually 3.5–5 cm. wide; natives of eastern Molokai. var. ε *Fosbergii* and f. 1. *pertinax.*[1]

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[1] Var. ζ *pelekunuanum,* a rare form from eastern Molokai having gigantic leaves with blade ±2.9 dm. long and ±9–10 cm. wide but with inflorescence as yet unknown, doubtless should follow at this point in the key.

c. Peduncles often 3–10 cm. long;[1] leaves when young commonly more or less densely brownish- or reddish-tomentose; bracts of pedicels narrowly linear; native of Maui . var. β *Lydgatei.*

A tree or tall shrub, 3–8 meters tall, with stiff, ascending branches. Leaves mostly in distant whorls, thick-chartaceous, glabrous unless at very first, often brownish when dry, often glossy, obovate-oblong, at apex acuminate, contracting below into a short, slender petiole 0.5–2 cm. long, blade 5–8 (more rarely up to 12) cm. long and 2–4.5 cm. wide. Flowers with heavy but sweet fragrance, both terminal in the uppermost leaf-whorl and axillary or all along the branches, clustered 15–25 in dense, corymbose, densely eglandular-tomentose racemes. Peduncle now 2–3 now up to 15 mm. on same branch; pedicels 4–8 mm. long, subtended by oblong, irregularly tomentulose bracts 4–6 mm. long; rhachis surrounded at base with numerous linear or lanceolate, irregularly glabrescent bracts 6–10 mm. long. Sepals ovate, obtuse to acuminate in same flower, densely covered with light yellow tomentum, 2–3 mm. long. Corolla white, its tube 10–12 mm. long, lobes broadly ovate to obovate and 5–8 mm. long. Ovary tomentose. Capsule oblong or square-rotund in outline, 1.7–2.8 cm. long (exclusive of rarely persisting stylar beak) and 1.5–2.3 cm. thick, as a rule deeply wrinkled, finally more or less glabrate, each valve usually with a deep, median, lengthwise groove; capsule when half-grown especially narrow, its stylar beak slender and about 4 mm. long. Seeds small, thin, shiny, black, about 5.5–6.5 mm. long.

Type specimen: Collected by *William Hillebrand,* alt. 4,000–6,000 feet, West Maui (Berl.).

Distribution: Both East and West Maui.

Specimens examined: East Maui.—*Otto Degener* 10,972, in forest, Pipe-Line Trail, Olinda, July 16, 1927 (Field); *Charles N. Forbes* 233-*M*, in woods of Makawao, July, 1910 (Bish.); *Forbes* 2,580-*M*, west bank of Honomanu Gulch, June 23, 1920 (Berl.; Bish.; Field; Gray); *Joseph F. Rock,* Nahiku, Hinai Hill, May, 1911 (Berl.; Bish.; Field; Gray).

West Maui.—*Edwin H. Bryan, Jr.*, 640, small tree, 2.5 meters tall, flowers white and fragrant, fruit brown (green when young), in lower rain-forest, on ridge, alt. 3,500 feet, Haelaau, December 20, 1928 (Field); *Lucy M. Cranwell, Olof H. Selling, & Carl Skottsberg* 2,777, on slope of Puu Kukui, between Haelaau and Nakalalua,

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[1] While this is a character of the variety as such, it must be borne in mind for purposes of identification of herbarium specimens that collectors do not always select for preservation specimens bearing one or more of the longer peduncles.

August 1, 1938 (Goth.); *Otto Degener* 10,968, in rain-swept forest, on summit of Mt. Eke, August 28, 1927 (Berl.; Deg.; Field, 2 sheets); *Degener* 10,973, in forest, near Mt. Eke on Waihee side, July 2, 1927 (Field); *G. R. Ewart III*, No. 79, tree 4 feet tall, flowers greenish-ivory and fragrant, in rain-forest, alt. 3,800 feet, Haelaau-Puu Kukui Trail, December 18, 1928 (Field); *Ewart, III*, No. 138, tree, 6 feet tall, flowers white, very fragrant, in rain-forest, alt. 4,600 feet, Haelaau-Puu Kukui Trail, December 18, 1928 (Field); *Ewart, III & George C. Munro* 104, 5 meters tall, flowers ivory-colored and fragrant, alt. 3,900 feet, in rain-forest, Haelaau-Puu Kukui Trail, December 18, 1928 (Field); *Charles N. Forbes* 124-*M*, Hauaula, June, 1910 (Berl.; Bish.; Field; Gray; Kew; Mo.); *Forbes* 405-*M*, Honokahau Drainage Basin, September 25 October 17, 1917 (Berl.; Bish.; Field); *Forbes* 424-*M*, same locality and date (Bish.); *Forbes* 505-*M*, same locality and date (Bish.); *Forbes* 510-*M*, same locality and date (Field); *Forbes* 2,312-*M*, ridge on left-hand side, Olowalu Valley, May 10, 1920 (Bish.); *Forbes* 2,319-*M*, flowers white with a greenish tinge, slight sweet odor, leaves dark-green, Olowalu Valley, May 10, 1920 (Field); *Forbes & C. M. Cooke* 8-*M*, ridges behind Lahaina, May, 1910 (Bish.; Field); *William Hillebrand*, alt. 4,000 feet, West Maui (Gray); *Joseph F. Rock* 10,069, Iao Valley, October, 1910 (Bish.); *Rock* 16,010, Honokahau Mts., September, 1918 (Bish.); *Rock & Hammond* 8,183, alt. above 4,000 feet, in woods back of Kaanapali, edge of Honokowai, August, 1910 (Berl.; Bish.; Field; Gray); *Harold Saint John* 10,182, small tree, 15 feet tall, flowers with heavy, sweet fragrance, on ridge, alt. 3,300 feet, Haelaau, February 5, 1930 (Berl.; Bish.; Field): *Saint John* 10,215, shrubby tree, 15 feet tall, on wooded ridge, alt. 3,700 feet, Haelaau (above Honokowai), February 6, 1930 (Field).

Dried specimens of this species simulate more or less closely those of *P. sulcatum*, of Oahu. In general, however, *P. sulcatum* may be recognized by its frequently more numerous and usually less exclusively verticillate leaves, its almost always larger sepals, and the glandular, multiloculate hairs clothing its inflorescence.

Hillebrand (*loc. cit.*) knew the species proper only from West Maui and the var. *Lydgatei* (his own var. β) only from East Maui. The two each occur in both parts of Maui, however, and distinctions between them are thus not to be settled lightly upon geographic grounds. Rock (*loc. cit.*) appears to have been misled partly by considerations of geography. Several of his specimens from West Maui were labeled in the herbarium by him as the species proper but belong clearly to the var. *Lydgatei*. Moreover, while he did in fact correctly admit both the species proper and var. *Lydgatei* as being in East Maui, he had mistaken several var. *Lydgatei* specimens in the herbarium for the species proper. This doubtless was due to over-emphasis of the long-peduncle character thought necessary by him for the var. *Lydgatei*. It is true that the species proper has a short peduncle, but in var. *Lydgatei* the peduncle varies greatly in length and frequently several sprays of the same suite of specimens show a range from subsessile to long-pedunculate inflorescences.

Pittosporum insigne var. β **Lydgatei** Sherff, Amer. Journ. Bot. 28: 19. 1941; *Pittosporum insigne* var. β Hillebr. Fl. Haw. Isls. 26. 1888.

Tree, now ±5 meters now 11–12.5 meters tall. Leaves averaging somewhat larger, narrower, and more glossy, but not consistently so, when young commonly more or less densely brownish- or reddish-tomentose; petiole 1–4 cm. long, blade up to 17 cm. long and 5.5 cm. wide (on the principal leaves of many but not all specimens mostly 2–3.5 cm. wide). Often some of the peduncles elongate (even 3–10 cm. long). Bracts of pedicels more narrowly linear; fruiting pedicels up to 1.6 cm. long. Sepals irregularly tomentose, at times entirely glabrate unless at margins, 2.5–5 mm. long.

Type specimen: Collected by *Reverend John M. Lydgate*, Hamakua, East Maui (Berl.).

Distribution: Both East and West Maui.

Specimens examined: East Maui.[1]—*Otto Degener* 10,964, in rain-forest, Pipe-Line Trail, Olinda, June 18, 1927 (Berl.; Deg.; Field); *Degener* 10,965, in forest, same locality, June 20, 1927 (Berl.; Deg.; Field); *Degener* 10,966, in rain-forest, same locality, June 21, 1927 (Field); *Charles N. Forbes*, in woods near Ukulele, above Olinda, July, 1910 (Bish.); *Forbes* 162-*M*, in woods east of Ukulele, above Olinda, July, 1910 (Berl.; Bish.; Field; Kew); *Forbes* 747-*M*, Ukulele, July, 1919 (Bish.); *Forbes* 2,500-*M*, Kailua, north slope of Haleakala, June 13, 1920 (Bish.); *Forbes* 2,672-*M*, mountains above Hana, July 5, 1920 (Berl.; Bish.; Field); *William Hillebrand & Rev. John M. Lydgate*, Hamakua (Bish.; really a cotype); *George C. Munro* 483, below Olinda, April 24, 1918 (Bish.); *Joseph F. Rock*, Nahiku, January 7, 1909 (Field); *Rock*, Hinai Hill, Nahiku, 1910 (Arn.); *Rock*, in wet forest, East Maui, May, 1911 (Arn.); *Rock* "D," East Maui, May, 1911 (Berl.; Bish.; Field); *Rock* 8,509, Waikamoi Gulch, September, 1910 (Berl.; Bish.; Del.; Field; Gray, 2 sheets;

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[1] Several of the East Maui specimens are referred here because of their large, glossy leaves.

Kew; Par.); *Rock* (similarly) 8,509, common in the forest of Hamakua, alt. 4,000 feet, September, 1910 (Arn., 2 sheets); *Rock* 8,611, tree, 35 to 40 feet tall, in lower forest, alt. 2,600–3,000 feet, Makawao, October, 1910 (Arn.; Berl.; Bish., 2 sheets; Field; Gray; Kew; N.Y.); *Rock* 10,071, Hinai Crater, Nahiku, May, 1911 (Bish.; Gray);[1] *Rock & Curran* 10,077, in forest above Makawao, May, 1911 (Bish.); *Harold Saint John* 10,320, tree, 25 feet tall, flowers fragrant, corolla cream-colored or its lobes yellowish, in swampy woods, alt. 4,300 feet, Kula Pipe-Line, Olinda, February 12, 1930 (Berl.; Bish.; Field; leaves long and glossy, but only the Field specimen has a well developed peduncle, this 2 cm. long); *Carl Skottsberg* 851, Kula Pipe-Line (along Olinda-Waikamoi Trail), Haleakala, October 18, 1922 (Bish.; Goth.).

West Maui.—*Otto Degener* 10,970, in forest, one-half mile north of Keahikauo, July 2, 1927 (Berl.; Deg.; Field); *Charles N. Forbes* 94-*M*, Iao Valley, June, 1910 (Berl.; Bish.; Field; Kew; a form with many of the leaves rounded or slightly emarginate at apex and up to 6.5 cm. wide, but not varietally separable); *Forbes* 107-*M*, same locality and date (Berl.; Field; Kew; Mo.); *Forbes* 2,250-*M*, on lateral ridge on right-hand side, Olowalu Valley, May 7, 1920 (Bish.; Field; latter specimen having peduncles up to 8.5 cm. long); *Forbes* 2,388-*M*, on lateral ridge at right, Olowalu Valley, May 16, 1920 (Berl.; Bish.; Field; youngest leaves pubescent beneath but soon glabrous; habit of leaves more as in species proper, but one spray has long peduncle, moreover *Forbes* 2,250-*M*, from the same ridge, is typical for this variety); *Alfred Meebold* (*Degener distrib. No.*) 10,803, Puu Kukui, October, 1935 (Deg.); *Rock*, Iao Valley, 1911 (Arn.; Berl.; Bish.; Field; important as being *especially* typical, with its peduncles ±5 cm. long, of the variety and yet coming from West Maui); *Rock* 8,183, Honokawai (Honokowai), August, 1910 (Gray; N.Y.; the Gray specimen a form with several of the lower bracts of the inflorescence foliaceous, narrowly obovate, ±2 cm. long, densely pubescent); *Harold Saint John* 10,222, small tree, flowers whitish and fragrant, on wooded ridge, alt. 3,800 feet, above Honokowai, Haelaau, February 6, 1930 (N.Y.).[2]

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[1] Rock (*loc. cit.*) writes of this and the other Nahiku specimens: "On the northern slope of Haleakala, at Nahiku, on the crater Hinai, at an elevation of about 3,000 feet, the writer met with a large number of trees which will also have to be referred to this species [*i.e.*, *P. insigne*]; they differ from the type specimens in the young leaves, which are covered with light brown tomentum, and in some other minor points." In the var. *Lydgatei* (where the Nahiku specimens really belong), however, the tomentum of the young leaves is not very anomalous, nor is it limited to Nahiku or even to East Maui material.

[2] In addition to the above cited specimens is one by *Degener*, No. 10,971, Hawaiian Isls. (Field).

Rock (Indig. Trees Haw. Isls. 169. 1913) referred to this variety as "a small tree, 15 to 18 feet in height." His No. 8,611 (above cited under East Maui), however, had been determined by himself as this variety ("var. β" of Hillebrand) and in the Arnold Arboretum, where fuller data are present for his *Pittosporum* collections, the label says "35 to 40 feet tall."

Pittosporum insigne var. γ **micranthum** Sherff, Field Mus. Bot. Ser. 22: 415. 1941.

Leaves commonly a little smaller, blade under 11 cm. long and under 5 cm. wide, scarcely glossy above. Axis of inflorescence under 2.5 cm. long; bracts linear-subulate, tomentose or irregularly glabrate, 3–4 mm. long; sepals ovate or ovate-oblong, tomentose or outwardly often glabrate, about 2 mm. long; corolla's tube only about 6–7 mm. long, lobes about 2–2.5 mm. long. Capsule less rugose, at first tomentose presently subglabrate, ±2.3 cm. long and ±1.5 cm. wide; seeds black, strongly and conspicuously tuberculate, ±6.5 mm. long and ±5.5 mm. wide.

Type specimen: Collected by *Charles N. Forbes*, No. 1,800-*M*, on south slope of Haleakala, Kanaio, East Maui, March 1, 1920 (Bish.).

Distribution: Known only from type locality in southwestern East Maui.

Specimens examined: *Otto Degener* 10,963, in arid lava region, Ulupalakua, June 23, 1927 (Berl.; Deg.; Field, 2 sheets); *Forbes* 1,800-*M* (type, Bish.: cotypes, Berl.; Field).

Pittosporum insigne var. δ **Hillebrandii** (Lévl.) Sherff, Field Mus. Bot. Ser. 22: 415. 1941; *Pittosporum Hillebrandii* Lévl. *in* Fedde Repert. 10: 121. 1911.

Leaves commonly larger, petiole up to 4 cm. long, blade up to 1.9 dm. long and 5 or even 7 cm. wide. Corolla-lobes of at least staminate flowers under 5 mm. long, the fertile anthers often wholly exserted above corolla-tube. Capsule usually much less rugose, often appearing smoothish to naked eye.

Type specimen: Collected by *Abbé Urbain Faurie*, No. 17, Pukoo, Island of Molokai, May, 1910 (Par.).

Distribution: Eastern Molokai.

Specimens examined: *Otto Degener* 10,977, in open woods, near Brown's Ranch, eastern Molokai, October 14, 1927 (Berl.; Deg.; Field); *Abbé Urbain Faurie* 10, Pukoo, May, 1910 (Arn.; Del.);

Faurie 15, same locality and date (Arn.; Del., 2 sheets); *Faurie* 16, same locality, June, 1910 (Arn.; Del., 2 sheets); *Faurie* 17 (type, Par.: cotype, Bish.); *Charles N. Forbes* 299-*Mo*, Pukoo, July, 1912 (Berl.; Bish.; Field, 2 sheets); *F. R. Fosberg* 13,364, tree 5 meters tall, in rain-forest, alt. 850 meters, on sloping plateau east of Mapulehu Valley, December 23, 1936 (Bish.; Field); *Joseph F. Rock* 7,002, Wailau Pali, April, 1910 (Arn., 2 sheets; Berl.; Bish.; Field); *Rock* 7,007, same locality and date (Bish.).

Some specimens of var. *Hillebrandii* offer an illusory resemblance to *P. glabrum* var. *spathulatum*, but must not be equated with that plant. Var. *Hillebrandii* has usually larger fruits (these more often oblong in outline, not more often broader than long), their faces more rugose and much less tomentose or even glabrate. Its leaf-habit, too, is usually somewhat different.

Pittosporum insigne var. ε **Fosbergii** Sherff, Field Mus. Bot. Ser. 22: 413. 1941.

Shrub or small tree, 3–6 meters tall. Similar to var. *Lydgatei* but differs: leaves more often 3.5–5 cm. wide, above commonly more coriaceous and glossy also more rugosely reticulate-veiny, the nascent ones also terminal portion of branch strongly appressed-hispid but finally glabrescent or more rarely (in dry state brown- or white-) pubescent, blade broader and toward apex less attenuate; peduncle under 1.5 cm. long.

Type specimen: Collected by *Saint John, Baker, Coulter, Fosberg, & Yuncker*, No. 12,604, shrub 10 feet tall, flowers below leaves on stem, on steep *pali* [Hawaiian for bluff, cliff, or precipice], in rain-forest, ridge between Hanalilolilo and Pepeopae, Waikolu Valley, Kawela, Island of Molokai, December 25, 1932 (Bish.).

Distribution: Eastern Molokai.

Specimens examined: *Lucy M. Cranwell & Carl Skottsberg* 2,550, in bog, Pepeopae, July 9, 1938 (Goth.); *Otto Degener* 10,958, in mossy rain-forest, near Puu o Wahaula, April 17, 1928 (Berl.; Deg.; Field, 2 sheets); *Degener* 10,960, in rain-forest, west of Pepeopae, April 12, 1928 (Berl.; Deg.; Field); *Charles N. Forbes* 445-*Mo*, Kalapamoa, August, 1912 (Bish.); *Joseph F. Rock* 6,164, on ridge back of Kamoku, March, 1910 (Arn.; Berl.; Bish.; Del.; Field; Kew); *Saint John, Baker, Coulter, Fosberg, & Yuncker* 12,511, tree 12 feet tall, in wet forest, alt. 3,900 feet, Puu O Kaeha, Kawela, December 23, 1932 (Bish.; Field; Yunck.); *Saint John et alii* 12,604 (type, Bish.: cotype, Field); *Saint John, J. Dunn, & Wm. B. Storey* 13,258, tree, 20 feet tall, on wooded ridge, alt. 2,400 feet, Kukuinui Ridge, Wailau Valley, July 4, 1933 (Field).

This handsome shrub or small tree was named after Dr. F. R. Fosberg, one of the type collectors, out of grateful appreciation of his assistance in my studies in the genus *Pittosporum*. Dr. Fosberg, as a student in the Hawaiian Islands during recent years, collected, either individually or jointly with one or more others, a vast quantity of invaluable material. All of his many *Pittosporum* specimens he placed at my disposal for study and identification.

In *P. insigne* proper, of Maui, some of the flowers are borne terminally, but in var. *Fosbergii* the flowers are apparently always, as indicated on the type label, cauline. In *P. insigne* var. *Hillebrandii*, which, like var. *Fosbergii*, inhabits eastern Molokai, the fruits are more smoothish and the leaves are usually thinner, also less rugose and glossy above. At times, however, some specimens of var. *Hillebrandii* offer an approach in one or two of these three respects.

In most of the material the leaves have shed all or most of their pubescence but in a few collections this has persisted over half or more of the lower surface. These are here referred to the following form:

Pittosporum insigne var. ε **Fosbergii** f. 1 **pertinax** Degener & Sherff *ex* Sherff, Field Mus. Bot. Ser. 22: 414. 1941.

Very similar to var. *Fosbergii* proper but with lower leaf-surfaces more or less tardily glabrescent, their very numerous white setae strongly appressed and finally often coalescing here and there into a very thin, somewhat scurfy, highly imperfect integument.

Type specimen: Collected by *Otto Degener*, No. 10,959, in forest, ravine just south of Maunahui, Island of Molokai, April 15, 1928 (Field).

Distribution: Known only from type locality (about 21° 8′ N. Lat. and about 156° 57′ W. Long.), eastern Molokai.

Specimens examined: *Otto Degener* 10,956, in moderately dry locality, ravine northwest of Puu Makaliilii, May 21, 1928 (Field); Degener 10,959 (type, Field).[1]

The specimens cited would seem sufficiently distinct from var. *Fosbergii* proper to warrant segregation as a separate variety if the strikingly peculiar character of pubescence were more constant.

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[1] Also many duplicates of these numbers, as yet undistributed by Mr. Degener.

Var. *Fosbergii* proper, however, shows at times small bits of the same kind of scurfy pubescence that is so characteristic here.

Pittosporum insigne var. ζ **pelekunuanum** Sherff, Field Mus. Bot. Ser. 22: 416. 1941.

Branch (a terminal portion less than 5 cm. long seen) also terminal bud densely whitish-tomentulose. Leaves (only two principal ones seen) large, petiole ±2.3 cm. long; blade oblong or obovate-oblong, at apex shortly acuminate, toward base subabruptly narrowed, finally more or less glabrescent (the few remaining setae solitary or clustered, much appressed, more often silvery-glossy), ±2.9 dm. long and ±9–10 cm. wide, above smoothish and not glossy. Capsule (a single mature one seen) oblong in outline, rugose and sulcate, densely brownish- or white-tomentulose, about 2.2 cm. long and about 1.6 cm. wide.

Type specimen: Collected by *Charles N. Forbes*, No. 586-*Mo*, Pelekunu Valley, Molokai, September, 1912 (Bish.).

Distribution: Known only from type locality on northern coast of eastern Molokai.

Specimens examined: *Forbes* 586-*Mo* (type, Bish.).

In eastern Molokai *Pittosporum sulcatum*, through its var. *Remyi*, and *P. insigne*, through its vars. *Fosbergii* and *Hillebrandii*, tend to approach each other somewhat, possibly through hybridizing. Thus, for example, several specimens referred to *P. sulcatum* var. *Remyi* (*e.g.*, Forbes 250-*Mo*) because of leaf characters have capsules more typical of the average ones found in *P. insigne* var. *Fosbergii*. Forbes 586-*Mo* represents, however, a plant that cannot well be accounted for as an intermediate. Its leaves are much too large to suggest either species. The type has two leaves left substantially intact and a portion of a third. They are so large as to suggest leaves of juvenile or second-growth shoots found in some other arborescent genera, but they are borne on an apparently normal, older branch. Then, too, they are accompanied by the single ripe and partly opened capsule (this unattached and filed in accompanying packet). We have also the consideration that Forbes was a careful collector and would doubtless never have obtained atypic leaves without making a note to that effect. It is unfortunate that no flowers were obtained, but on the basis of the evidence at hand the plant seems best considered as a very large-leaved, densely tomentulose-fruited variety of *P. insigne*.

20. **Pittosporum undulatum** Vent. Jard. Cels. pl. 76. 1800; Edwards Bot. Reg. 1: 16, *tab*. 16. 1815.

Shrub or small tree, rarely 5 meters (or in native habitat up to 12 meters) tall; branches slender, twigs glabrous or sometimes pubescent, bark smooth and gray. Leaves alternate, somewhat less crowded toward tips of branches than in most of the native Hawaiian species, glabrous or when very young somewhat pilose; petiole delicate, 1.5–3 cm. long; blade oblong-oblanceolate, acuminate at both ends, often somewhat glossy, undulate at the margins, 8–13 cm. long and 1.5–3.3 cm. wide. Flowers few, whitish, fragrant, on slender, branched, subulate-bracted, pubescent pedicels; inflorescence terminal on youngest branches, at anthesis ±3 cm. long. Sepals lanceolate-subulate, acuminate above, sparsely pubescent, 5–9 mm. long. Petals oblong-lanceolate above, acute or subacute at apex, very slightly connate, ±9 mm. long. Ovary 2-celled, hairy. Capsule obcompressed, yellow when fresh, 1–1.5 cm. long and often slightly wider, erugose, glabrous or near middle obscurely fulvo-tomentulose, about 25-seeded, the persistent style ±2 mm. long. Seeds angular, only about 3 mm. long and 1 mm. thick, dark brown, smooth.

Type specimen: Ventenat had before him a shrub, erroneously understood by him to have come from the Canary Islands. This had been cultivated for some years at the garden of J. M. Cels, passing the winter in the orange-house and blooming "en messidor et thermidor" (June 19 to August 17). According to Edwards (*loc. cit.*), this shrub was introduced into England "by Sir Joseph Banks from New Holland in 1789," and "Monsieur Ventenat was misinformed when he stated it to be a native of the Canary Islands."

Distribution: "Completely naturalized and common along the roadside and open forest between Honokaa and Kamuela, Kohala District of Hawaii" (Degener, Fl. Haw. fam. 156. May 5, 1937). Native of Australia.

Specimens examined: *Otto Degener* 9,089, naturalized and common along road above Honokaa, between Waimea and Honokaa, Kohala District, March 25, 1930 (Corn.; Mo.; N.Y.); *Degener* 9,090, naturalized in open forest near road in region above cane-fields, Honokaa, July 28, 1926 (Corn.; Deg.; Mo.; N.Y.); *Degener* 9,091, Kohala District, March 22, 1930 (N.Y.); *Charles Sheldon Judd* 31, tree 5 meters tall, fruit yellow, alt. 500 meters, planted along Government Road near Honokaa, November 18, 1925 (Bish.).

Degener (*loc. cit.*) states that this species was "introduced, probably with many other interesting plants, by W. Herbert Purvis who began the growing of sugarcane at Kukuihaele about 1875."

21. **Pittosporum confertiflorum** A. Gray, Bot. U. S. Explor. Exped. 232, pl. 19. 1854.

a. Leaf-blade usually 7.5–18 cm. long and 3.5–5 cm. wide; capsules mostly 2–3 cm. long.
  b. Axis of inflorescence (including peduncle) 2–7 cm. long, pedicels mostly 1.3–3.3 cm. long; native of West Maui. var. γ *longipes.*
  b. Axis of inflorescence (including peduncle if present) 1–3 cm. long, pedicels 6–12 mm. long.
    c. Leaves mostly pale brownish- or whitish-tomentose beneath; sepals broadly ovate; native of Maui and Hawaii. *P. confertiflorum* sensu stricto.
    c. Leaves mostly rufo-tomentose beneath; sepals lanceolate or moderately ovate; native of Oahu, Lanai, central easternmost West Maui, and Hawaii............. var. β *Mannii.*
a. Leaf-blade usually 3–7.5 cm. long and 1.3–3.5 cm. wide; capsules under 1.5 cm. long; native of Lanai....... var. δ *microphyllum.*

A tree, 6–9 meters tall, branches stout and stiff; branchlets tomentose when young. Leaves many, especially so near ends of branchlets, alternate or at times imperfectly verticillate, coriaceous, obovate or at times obovate-oblong, apically obtuse or often shortly acuminate, basally tapering into a distinct petiole 1–2.5 cm. long, tomentose on both surfaces when nascent but finally very glabrous and at times somewhat glossy above, remaining densely tomentose beneath with brownish or more or less whitening wool (or this at times irregularly or completely deciduous), with moderately to conspicuously salient lateral nerves, finely bullate-reticulated on upper surface, blade usually 7.5–15 cm. long and 3.5–5 cm. wide, the entire margins somewhat revolute. Inflorescence of both sexes terminal or at times also axillary and even cauline, very tomentose except for fragrant corollas, when terminal having numerous flowers, these densely crowded in a corymbose, at times sessile raceme having an axis 1–3 cm. long. Pedicels 6–12 mm. long, these and peduncle at times becoming glabrate in age; bracts linear-oblong, up to ±16 mm. long. Sepals orbicular-ovate, obtuse, imbricated, about 6 mm. long. Corolla glabrous, cream-colored, tube 10–12 mm. long;

petal-tips broadly ovate, 6–8 mm. long, spreading, imbricated or sometimes convolute in aestivation. Stamens nearly equalling tube of corolla, filaments filiform-subulate; anthers linear-sagittate, apiculate. Pistil about 1.2 cm. long; ovary sessile, oblong in outline, tomentose, incompletely 2-celled; style thick, glabrous, about as long as ovary; stigma truncate, undivided. Capsule globose-ovoid, somewhat flattened; valves woody, usually thick, about 2.5 cm. long, ovate to vertically or seldom horizontally oblong in outline, externally more or less persistently tomentose and usually tuberculate-wrinkled and rough but sometimes somewhat smoothish. Seeds compressed and angled, crenulate on dorsal edges.

Type specimen: Collected by the *United States Exploring Expedition under Captain Charles Wilkes,* at base of Crater of Haleakala, East Maui, about 1840 (U.S., 2 sheets).

Distribution: Both East and West Maui; also at Kahuku, Island of Hawaii.

Specimens examined: East Maui.—*Charles N. Forbes* 287-*M*, Crater of Haleakala, August, 1910 (Berl.; Bish.; Field; Kew; Par.); *Forbes* 896-*M*, east of Ukulele, July 20, 1919 (Bish.; Field); *Forbes* 1,013-*M*, Keanae Gap, Crater of Haleakala, August 2, 1919 (Bish.); *Forbes* 1,054-*M*, same locality, August 3, 1919 (Bish.); *Forbes* 1,126-*M*, Crater of Haleakala, above Oili Puu, August 12, 1919 (Bish.); *Forbes* 2,005-*M*, south slope of Haleakala, Lualailua, March 17, 1920 (Field); *Rock* 8,681, near Kaupo, District of Auwahi, November, 1910 (Bish.); *Carl Skottsberg* 835, alt. 2,200–2,300 meters, in Crater of Haleakala, below highest rim, October 16, 1922 (Bish.; Goth., 2 sheets); *United States Southern Pacific Exploring Expedition under Captain Charles Wilkes,* base of Crater of Haleakala, about 1840 (type, U.S., 2 sheets: cotypes, Gray; Kew).

West Maui.—*Otto Degener* 10,969, near Puu Anu on Manawainui Gulch side, July 12, 1927 (Field; fragmentary and lacking a terminal inflorescence); *Carl Skottsberg* 791 *pro parte,* Iao Valley, October 11, 1922 (Goth.).

Hawaii.—*Alfred Meebold* (*Degener distrib. No.*) 10,802, Kahuku, November, 1935 (Field).

Pittosporum confertiflorum var. β Mannii Sherff, Amer. Journ. Bot. 28: 24. 1941; *Pittosporum confertiflorum* var. β Hillebr. Fl. Haw. Isls. 26. 1888.[1]

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[1] It will be noted that *Pittosporum confertiflorum* var. β H. Mann (Enum. Haw. Pl. No. 17; Proc. Amer. Acad. 7: 150. 1867) is omitted here. It is true

Leaves usually smaller rarely larger, their tomentum usually reddish-brown. Inflorescence of both sexes at first terminal, but the fruiting one often finally axillary by the development of a terminal shoot. Sepals lanceolate or moderately ovate. Capsules often more narrowly ovoid and more extremely roughened (at times suggesting an exceptionally rough peach-pit), in age pubescent or glabrate.

Type specimen: Collected by *Horace Mann & William T. Brigham*, No. 337, Island of Lanai, 1864–1865 (Corn.).

Distribution: Central easternmost West Maui and islands of Oahu, Lanai, and Hawaii.

Specimens examined: Oahu.—*H. F. Bergman*, alt. 3,200 feet, in wet soil, on exposed slope, north side of Mt. Kaala, February 11, 1928 (Field); *Edwin H. Bryan, Jr.*, alt. above 3,000 feet, by trail, east side, Puu Kaala, Waianae Mts., July 22, 1928 (Field); *Bryan*, alt. 1,000 feet, Pupukea, January 23, 1929 (Field; a strange form, placed here because of terminal inflorescence, but has longer leaves up to 2 dm. long including petiole, like those of *P. cladanthum*); *Bryan* 457, alt. about 3,000 feet, east side trail, Mt. (Puu) Kaala, Waialua District, same date (Corn.); *Otto Degener et alii*, Kaala, May 1, 1938 (Deg.; Field); *Degener, Emilio Ordoñez, & Olof H. Selling* 12,243, in forest, alt. 3,500 feet, southeast slope of Kaala, September 25, 1938 (Field); *Degener, Felix C. Salucop, & Valentin (Valentine) Arlantico* 12,075, in forest, southeast slope of Kaala, December 19, 1937 (Berl.; Deg.; Field); *Degener, Salucop, & Arlantico* 12,076, same locality and date (Deg.; Field; sterile sprays, leaves all entirely glabrate, otherwise closely matching Degener *et al.* 12,075 and *Degener, Ordoñez, & Selling* 12,243 from same locality); *F. R. Fosberg* 8,998, bush, 3 meters tall, alt. 800 meters, on open ridge, east ridge, Puu Kaua, Waianae Mts., November 6, 1932 (Bish.; Field); *Edward Y. Hosaka* 1,263, branching tree, 20 feet tall, in wet woods, alt. 3,700 feet, Puu Kaala, Waianae Mts., October 4, 1934 (Field); *Joseph F. Rock*, Punaluu (Arn.); *Harold Saint John* 11,041, on wooded ridge, alt. 2,600 feet, Puu Kanehoa, Waianae Mts., March 22, 1931 (Bish.; Field); *Olof H. Selling* 3,582, entrance to Kaala, east side of Waianae Mts., September 25, 1938 (Goth.); *Carl Skottsberg (with A. Judd)* 364, north slope of Kaala, Waianae, August 30, 1922 (Goth.; labeled by Skottsberg as *Pittosporum*

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that Mann cited Mann & Brigham 337 (the type collection of my var. *Mannii*) for his var. β, but he *first* cited *P. Terminalioides* var. β Gray as a synonym and that variety, as implied elsewhere (see under *P. cladanthum* var. *reticulatum*, p. 531), is apparently very different from *P. confertiflorum* and its varieties.

cauliflorum H. Mann, and so treated by him in Meddel. Göteb. Bot. Trädg. 10: 109. 1936; but has terminal inflorescence).

Lanai.—*Charles N. Forbes* 72-*L*, mountains near Koele, June, 1913 (Field); *Forbes* 73-*L*, same locality and date (Bish.); *Forbes* 86-*L*, same locality and date (Berl.; Field; Kew); *Forbes* 106-*L*, same locality and date (Bish.); *Forbes* 125-*L*, same locality and date (Berl.; Field); *Forbes* 136-*L*, same locality and date (Field; Kew); *Forbes* 140-*L*, mountains behind Koele, same date (Berl.; Del.; Field; Gray); *Forbes* 304-*L*, Lanai, September, 1917 (Bish.); *Forbes* 305-*L*, same locality and date (Bish.); *F. R. Fosberg* 12,589, shrub, 4 meters tall, flowers white and fragrant, alt. 800 meters, in wet gulch bottom, Kaiholena Gulch, December 3, 1935 (Bish.; Field); *Fosberg* 12,593, spreading tree, 5 meters tall, flowers white, not very fragrant, alt. 800 meters, at wet bottom of gulch, near head of Kaiholena Gulch, same date (Field, 2 sheets); *Mann & Brigham* 337 (type, Corn.: cotypes, Bish.; Del.; Field, 2 sheets; Gray; Kew; Mo.; N.Y.; U.S.); *George C. Munro*, Lanai (Field); *Munro*, Kaiholena, June 20, 1914 (Bish.); *Munro*, at foot of cliff, Lanaihale, April 8, 1915 (Berl.; Field; Kew); *Munro* 46, outer forest, Kaiholena, August, 1913 (Bish.); *Munro* 131, on ridge at head of Kaiholena, September 28, 1913 (Bish.); *Munro* 139, Kaiholena, September 28, 1913 (Bish.); *Munro* 252, Waiopaa (Waiapaa), March 24, 1915 (Bish.); *Munro* 331, on ridge head of Maunalei, April 6, 1915 (Bish.); *Munro* 332, Kaiholena, January 3, 1915 (Bish.; form with large leaves, their blades up to 2 dm. long and to 7.5 cm. wide); *Munro* 334, Kaiholena, June 20, 1914 (Bish.); *Munro* 376 *pro parte*, same locality, January 3, 1915 (Bish.); *Munro* 433, Waiopaa (Waiapaa), March 26, 1915 (Bish.); *Emilio Ordoñez* (*Otto Degener distrib. No.*) 12,845, Waialala Gulch, July 7, 1940 (Berl.; Deg.; Field); *Ordoñez* (*Degener distrib. No.*) 12, 848, Puu Alii, July 14, 1940 (Berl.; Deg.; Field); *Ordoñez* (*Degener distrib. No.*) 12,849, same locality and date (Berl.; Deg.; Field); *Jules Remy* 573, Lanai, 1851–1855 (Par.); *Joseph F. Rock* 8,066, Lanaihale, July, 1910 (N.Y.); *Rock* (similarly) 8,066, same locality, July 22, 1910 (Berl.; Del.; Field; Gray; Kew; Par.); *Rock* (similarly) 8,066, Haalelepaakai, July 22, 1910 (Gray); *Rock* 8,087, Kaiholena Valley, July 24, 1910 (Field); *Rock* 8,104, Mahana, August 2, 1910 (Arn.; Berl.; Bish.; Field; Gray; Kew); *Rock* (similarly) 8,104, same locality, August, 1910 (N.Y.); *Rock* 8,108, same locality, July 23, 1910 (Field); *Rock* 8,110, same locality, July 28, 1910 (Berl.; Del.; Field; Kew; Par.); *Rock* 8,111, Kaiholena, August 5, 1910 (Berl.; Bish.; Field); *Rock* (similarly) 8,111, tree, 15 feet tall, leaves greenish underneath, fruits dark-purple inside, first valley, dry foothills of Mahana, same date (Arn.); *Rock & Hammond* 8,066, on top of ridge leading to the main one, July 22, 1910 (Arn., 2 sheets); *Rock & Hammond* 8,110, in shady places under guayava bushes, valley facing main ridge, July 28, 1910 (Arn.); *Rock & Moki* 8,087, small tree or shrub, at the head of Mahana Valley, July 24, 1910 (Arn.); *Rock & Moki* (similarly) 8,087, Kaiholena Valley, July 24, 1910 (Berl.; Field); *Rock & Moki* 8,108, on top of ridge leading to Haalelepaakai, July 23, 1910 (Arn., 2 sheets; form with more rugose capsules); *Rock & Moki* (similarly) 8,108, Haalelepaakai, same date (Berl.; Field; Kew; form with capsules more deeply sulcate and rugose).

West Maui.—*Charles N. Forbes* 138-*M*, Waikapu Valley, June, 1910 (Bish.); *Joseph F. Rock*, Waikapu Valley, May, 1911 (Arn.; Berl.; Bish.; Field; Kew).

Hawaii.—*Charles F. Forbes* 386-*H*, Kau Desert, August 2, 1911 (Berl.; Del.; Field); *Rock* 12,980, Kona Road, South Kona, August, 1917 (Bish.; form approaching in leaf-texture *P. Terminalioides* var. *macropus* Skottsb. of same locality); *Mrs. Francis Sinclair, Jr.*, Kaolaunui, *commun.* January, 1885 (Kew).

Forms with more veiny and more red-tomentose lower leaf-surfaces may offer a resemblance to *P. cauliflorum* var. *reticulatum*, but usually can be recognized by their narrower sepals and their terminal inflorescence. The type or at least first cited material of Hillebrand's unnamed *P. confertiflorum* var. *β* came from "Hawaii! *Kau* and *Kona*." His second citation was of the Lanai material collected by Mann and Brigham, No. 337. The Hillebrand type in Berlin has been inaccessible to me because of war conditions. I have therefore, in the interests of absolute certainty, selected Mann and Brigham 337 for the type collection, of which no fewer than nine sheets are now before me.

Occasionally the capsules of Lanai material become exceedingly rough, the several dozen glabrescent surface-elevations on each valve resembling darkened, malformed, fungoid, at times coalesced tongues 4–9 mm. long (*e.g.*, Forbes 304-*L*, Bish.). Fosberg 12,593 has such rough capsules that I originally had regarded it tentatively as representing a new or at least separate species. It is connected with var. *Mannii* quite positively, however, by such specimens as Rock & Moki 8,108. The valves may finally appear more or less cordate when flattened out and measure 3 cm. long and wide.

It seems improbable that *P. cladanthum* occurs on Lanai. Therefore several larger-leaved sprays of sterile or cauline-flowering or

-fruiting material from Lanai that, on Oahu, might pass for that variety, are assumed to belong here (Munro 334 and 376 *pro parte;* Rock 8,104 and 8,111). Rock 8,111 is noteworthy in this respect. The Berlin and Bishop Museum specimens of that plant have all the peduncles cauline, but the Field Museum specimen has, in addition to 3 cauline peduncles, one that is about 2.5 cm. long and is *terminal on a tiny lateral branchlet* of about 8 mm. in length, this bearing at its tip a leaf about 9 cm. long.

Pittosporum confertiflorum var. γ **longipes** Sherff, Field Mus. Bot. Ser. 22: 428. 1941.

Leaf-blade 9–17 cm. long and 3.5–6.5 cm. wide, on upper surface finally glabrate excepting for the veins, on lower surface conspicuously veiny and brown- or reddish-brown-tomentose, at apex acuminate. Flowers unknown. Inflorescence terminal or finally subterminal, loosely racemose, ±15-flowered, densely brown-tomentose, its axis 2–7 cm. long (including slender, up to ±3.5 cm. long peduncle), pedicels slender and commonly 1.3–3.3 cm. long. Capsule unknown.

Type specimen: Collected by *Charles N. Forbes,* No. 28-*M,* on ridges behind Lahaina, West Maui, May, 1910 (Bish.).

Distribution: Known only from type locality in western West Maui.

Specimens examined: *Forbes* 28-*M* (type, Bish.: cotype, Field).

The type had been labeled at Bishop Museum as a new species, with the observation that it was probably related to *P. confertiflorum.* The leaf-characters combined with a terminal inflorescence suggest *P. confertiflorum* var. *Mannii,* but the elongate peduncles, inflorescence-axes, and pedicels separate it at once from that variety. The type has a cluster of five peduncles at the tip of a single branch, each peduncle with several or many pedicels. The cotype has one originally terminal inflorescence and, about 1.5 cm. lower, an axillary inflorescence. As happens in so many forms of *Pittosporum,* a subsequently developed terminal or subterminal shoot has left the upper inflorescence on the cotype subterminal. The shoot has some leaves nearly full-grown but still retaining over most of their upper surface the original brownish tomentum. The older leaves lower down, however, have become completely glabrous above except along some of their veins.

It is unfortunate that flowers and fruits are not at hand. Until they can be had, some doubt must exist, of course, as to the wisdom of assigning this form a varietal status next to var. *Mannii* or indeed under *P. confertiflorum* at all.

Pittosporum confertiflorum var. δ **microphyllum** Sherff, Amer. Journ. Bot. 28: 25. 1941.

Leaves smaller, blade only 3–6.5 (rarely –8) cm. long and 1.3–3.5 cm. wide. Inflorescence always terminal, subsessile. Capsules (1–3 for an inflorescence) smaller, moderately roughened, at first densely brown-tomentose, at last irregularly now tomentose now glabrescent, compressed; valves horizontally oblong-orbiculate, about 1.5 cm. tall and almost 2 cm. wide, seeds 5.5–6.5 mm. long.

Type specimen: Collected by *Charles N. Forbes*, No. 14-*L*, Kaiholena, Island of Lanai, June, 1913 (Bish.).

Distribution: Known only from type locality on Island of Lanai.

Specimens examined: *Forbes* 14-*L* (type, Bish.: cotypes, Berl.; Field; Gray).

A single opened flower on the type has oblong-lanceolate sepals, these about 2.5 mm. long; corolla-tube about 5 mm. long and petal-tips about 2.5 mm. long.

22. **Pittosporum halophiloides** Sherff, Amer. Journ. Bot. 28: 18. 1941.

Tree ±5 meters tall, young branchlets appressedly gray- or brown-tomentose. Leaves disposed more or less in whorls at tips of branchlets, when very young golden-yellow finally blackish-brown, narrowly petiolate; petiole appressed-tomentose, ±1 cm. long; blade obovate, at apex obtuse or scarcely subacuminate, at margins more or less revolute, on upper surface coriaceous also finally glabrous and reticulate with small, impressed veins, on lower surface persistently tomentose with red-brown tomentum and with salient, larger veins, commonly 4–8.5 cm. long and 2–4 cm. wide. Inflorescence of female flowers terminal, corymboid-racemiform (peduncle up to 2 cm. long), brown-tomentose, ±12-flowered with moderately fragrant flowers. Pedicels slender, at least 4–8 mm. long. Sepals lanceolate-ovate, acute, very densely brown-tomentose, 4–6.5 mm. long. Corolla's tube about 8–9 mm. long, lobes 4–5 mm. long; stamens a half shorter than tube. Capsule similar to that of *Pittosporum glabrum*, compressed; valves 2, in outline cordate-rounded, outwardly in part glabrate in part tomentellous, longitudinally marked with a median groove otherwise obscurely rugose or transversely somewhat wrinkled, 1.6–2 cm. long (exclusive of residual style, this about 2 mm. long) and scarcely wider. Male inflorescence unknown.

Type specimen: Collected by *Rock & Hammond*, No. 8,109, tree, 16 feet tall, flowers somewhat fragrant, leaves golden-yellow when young, dark-chocolate-brown when old, Mahana Valley, Island of Lanai, July 31, 1910 (Arn.).

Distribution: Known only from Island of Lanai.

Specimens examined: *George C. Munro*, Lanai (Field); *Rock & Hammond* 8,109 (type, Arn.: cotypes, Berl.; Bish.; Field, 2 sheets; Kew).

The type sheet bears two sprays, the lower one having two branchlets. One of these branchlets bears a single terminal capsule,[1] accompanied by a few fruitless pedicels 6 or 8 mm. long. Lower down on the specimen, however, are two clusters of old, fruitless pedicels. These are especially slender and are mostly 1.4–1.6 cm. long. Whether these perchance represent staminate inflorescences I cannot say.

The species was named in allusion to its resemblance to *Pittosporum halophilum.* From that species, which is a small shrub and not a tree (and which is unknown as to its fruit), *P. halophiloides* differs at once in its proportionately narrower leaf-blades and in having a terminal, not cauline inflorescence. *P. halophiloides* bears a strong superficial resemblance to *P. confertiflorum* var. *Mannii*, from which it differs in not having strongly rugose capsules.

23. **Pittosporum Hosmeri** Rock, Bull. Torr. Bot. Club 37: 297, fig. 1. 1910; also Rept. Haw. Board Agr. and For. Div. For. 84, pl. 20. 1911.

a. Leaves glabrous beneath or at most irregularly and sparsely appressed-setose........................var. γ *Saint-Johnii.*

a. Leaves tomentose beneath.

  b. Capsules 4–7.5 cm. long and 4–5.5 cm. wide or thick; leaf-blade up to 2.4 dm. long and 3–6 cm. wide, -petiole 2–3 cm. long; pedicellar bracts 2–4 mm. long; a tree 5.5–10 meters tall..............................*P. Hosmeri* sensu stricto.

  b. Capsules 2.8–5 cm. long and thick; leaf-blade up to 3.5 dm. long and 5–9 cm. wide, -petiole 1.5–5 cm. long; pedicellar bracts up to 11 mm. long; a much smaller tree or almost a shrub. var. β *longifolium.*

A tree, 5.5–10 meters tall, trunk straight and often 3 dm. thick, branches stout, young shoots densely tomentose. Leaves crowded at ends of branches, subcoriaceous, petiole 2–3 cm. long; blade oblanceolate or oblong-oblanceolate, at apex acute to shortly acuminate, on upper surface soon glabrous and finely reticulate-veiny, densely tomentose beneath with a light to dark brown or reddish-brown wool, 1–2.4 dm. long and 3–6 cm. wide. Inflorescence axillary and cauline, racemose, ±10 flowers clustered subumbellately toward tip of tomentose axis, this 1–3 cm. long and bracteate especially at and near base with tomentose, linear-subulate, 2–4 mm. long bracts. Pedicels pubescent, about 2 mm. long. Sepals tomentose or at base often glabrate, ovate, acute, about 4 mm. long. Corolla cream-colored, tube about 8–10 mm. long; lobes ovate, mostly 4.5–5.5 mm. long, their veins prominent or in dried material obscure. Fertile stamens as long as corolla-tube, anthers oblong. Ovary tomentose, oblong-ovoid, more than half the length of the slightly exserted style. Capsule tomentose when young, finally more or less glabrate and erugose, in outline oblong to subquadrangular and at both ends more or less cordate, 4–7.5 cm. long and 4–5.5 cm. wide, ±4.5 cm. thick, commonly 2- less often 3- or even 4-valved, often somewhat constricted about half-way up; valves usually with a longitudinal median groove; endocarp bright orange-colored; seeds arranged alternately in two rows on each placenta, black, rugose, 6–7 mm. long, occupying only perhaps a tenth of the capsular cell. Fruits exuding when fresh a milky, glutinous sap.

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[1] One cotype sheet at Field Museum bears a cluster of six mature capsules. A sheet at Berlin has four in one cluster.

Type specimen: Collected by *Joseph F. Rock*, No. 3,957, alt. 3,000 feet, on lava field of Puuwaawaa, slope of Mt. Hualalai, North Kona, Island of Hawaii, June 17, 1909 (Bish.).

Distribution: Known only from type locality in northwestern Hawaii.

Specimens examined: *Charles N. Forbes* 29-*H*, Puuwaawaa, June 8–14, 1911 (Berl.; Bish.; Field; Kew; Mo.); *Forbes* 271-*H*, Kanehaha (Kanahaha), North Kona, June 28, 1911 (Bish.); *Forbes* 348-*H*, Honomalino, South Kona, July 23, 1911 (Berl.; Bish.; Field); *Alfred Meebold*, alt. 5,000 feet, Hualalai, May, 1932 (Bish.); *Meebold* 20,810, same locality, November, 1935 (Deg.; N.Y.); *Joseph F. Rock*, Puuwaawaa, June, 1909 (Gray); *Rock* 20 (3,958), Puuwaawaa hill and neighborhood, June 15, 1909 (Bish.); *Rock* 3,957 (cotypes, Arn.; Gray, 2 sheets; *nom. vulg.*, Aawa hua kukui); *Rock* 3,964, Puuwaawaa, June 17, 1909 (Arn.); *Rock* 10,074*a*, Puuwaawaa, March, 1912 (Gray); *Rock* 12,962, same locality, August–September, 1917 (Bish.); *Rock* 17,137, same locality, August, 1917 (Bish.).

This species was named in honor of Mr. Ralph S. Hosmer, Superintendent of Forestry, Division of Forestry, Territory of Hawaii. Rock states that the trees "are loaded with fruit during June and July," but adds that the fruiting season, as in the case of "nearly all the other Hawaiian trees, cannot be relied upon." Specimens have been found in fruit in August, September, and November. About the color of the mature capsules he is silent, although he especially notes the color for var. *longifolium* as orange-yellow. He adds: "The fruits of *P. Hosmeri* and variety *longifolium* are a source of food for the native crow *Corvus hawaiiensis* or *Alala*, which pecks open the large woody capsules and feeds upon the oily seeds within. The crow is peculiar to Kona, Hawaii. Nearly 80% of all the capsules of this species examined by the writer were eaten out by these birds, which are still very common."

Pittosporum Hosmeri var. β **longifolium** Rock, Indig. Trees Haw. Isls. 163, pls. 58 and 60. 1913.

A much smaller tree or almost a shrub. Leaves lanceolate-oblong to obovate-oblong, at apex rounded or acuminate, petiole 1.5–5 cm. long, blade 0.8–3.5 dm. long. Peduncle up to 4.5 cm. long. Bracts up to 11 mm. long. Sepals ovate to ovate-lanceolate, 5–6 mm. long. Capsules smaller, orange-yellow when mature, densely tomentulose or in patches glabrate, (if 10 on a common peduncle, forming a cluster of ±1.2 dm. in diameter,) at times globose, 2.8–5 cm. long and thick. Seeds smaller, 4.5–6 mm. long.

Type specimen: Rock cited no particular type but gave the three localities (1) the drier districts in South Kona, (2) Kilauea, and (3) above Huehue at altitude of 5,000 feet. For South Kona he specified one station, namely, Kapua. His No. 10,023 at Gray Herbarium was from Kapua in South Kona and had been labeled by him, "cotype (flowering)." His 10,074 at Gray Herbarium and at the New York Botanical Garden was from Kilauea Volcano and had been labeled by him similarly "cotype." At the latter institution the specimen was with submature fruits. Hence it would seem to follow that his Nos. 10,023 and 10,074 at Bishop Museum, as in numerous other comparable cases, would be the official types.

Distribution: To the west and southwest on the Island of Hawaii.

Specimens examined: *Otto Degener* 10,989, in forest, near 1926 Lava Flow, July 26, 1926 (Field); *Charles N. Forbes* 286-*H*, Kealapuali, North Kona, June 29, 1911 (Berl.; Bish.; Del.; Field; some of the younger capsules coarsely lumpy); *Forbes* 362-*H*, Kapua, Kona, July 25, 1911 (Field); *Forbes* 368-*H pro parte*, same locality, July 15, 1911 (Berl.; Bish.; Field; Gray; commixed with *P. Terminalioides* collected in Kau Desert, August 2 of same year); *Albert F. Judd*, flowers cream-white, faintly fragrant, cauline, 1 foot or so below leaves (these clustered in 2 or 3 series at and near end of branch), cult. at Kamehameha Girls' School Hawaiian Garden, Honolulu, Isl. Oahu (from seed brought by Judd from Kau Desert, Isl. Hawaii), March 18, 1938 (Bish.); *Joseph F. Rock*, Puu Laalaau, Hualalai, June 10, 1909 (Gray); *Rock* 21 (3,970), between Hinakapauula and Puu Laalaau, Hualalai, same date (Bish.); *Rock* 22 (3,959), Puu Laalaau, Hualalai, June 10, 1909 (Field); *Rock* 3,805, alt. 4,000 feet, in cool, shady forest on slopes of Hualalai, June 10, 1909 (Arn.); *Rock* 3,806, in forest, Puu Laalaau, same date (Bish.); *Rock* 3,969, alt. 4,500 feet, Hualalai, June 10, 1909 (Arn.); *Rock* 10,023, Kapua, South Kona, January 28, 1912 (cotypes as to flowering material, Arn.; Berl.; Field, 2 sheets; Gray; Kew); *Rock* 10,074, Kilauea Volcano, July, 1911 (cotypes as to fruiting material, Gray; N.Y.); *Rock* 13,038, along the South Kona Road, August, 1917 (Bish.); *Rock & Copeland*, Kapua, South Kona, August, 1915 (Bish.); *Saint John, Hashimoto, Hosaka, Lindsay, & Mitchell* 11,312, tree, 20 feet tall, alt. 2,200 feet, Manuka *mauka* ["*mauka*" being the Hawaiian equivalent for "inland" or "toward the mountains"], Hoopuloa Quadrangle, December 24, 1931 (Berl.; Bish.; Field); *iidem* 11,329, tree, 20 feet tall, wooded *kipuka* ["an open and fertile place in a forest or a lava flow," J. W. Coulter, Gazetteer Terr. Haw. 206. 1935], alt. 1,600 feet, same locality, December 26, 1931 (Berl.; Field; Kew); *iidem* 11,353, wooded *kipuka, aa* [*i.e.*, rough, broken] lava, alt. 1,800 feet, same locality and date (Field); *Carl Skottsberg* 620, Kau-Kona Road, between Pahala and Naalehu, September 21, 1922 (Bish.; Goth.).

Rock (*loc. cit.*) states that "the trees from Kilauea are identical with those from Kapua, South Kona, and also with specimens from the upper slopes of Hualalai, from the forests above Huehue at an elevation of 5,000 feet, while the typical *Pittosporum Hosmeri* is peculiar to Puuwaawaa. So far as can be judged from herbarium specimens, it is impossible to distinguish some large-fruited specimens of the var. *longifolium* from some small-fruited specimens of the species proper. Forbes, Saint John, and Skottsberg, all of them collectors with a first-hand field-knowledge of one or both forms, seem from their labels to have ignored or rejected the var. *longifolium*. It is quite possible, however, that Rock's interpretation of the variety as valid will be supported by future field-observations. For the present, I have been guided by Rock's statement of geographic range in identifying all doubtful specimens.[1]

Pittosporum Hosmeri var. γ **Saint-Johnii** Sherff, Field Mus. Bot. Ser. 22: 413. 1941.

Shrub, ±1.8 meters tall. Submature and mature leaves with petiole 1.5–3.5 cm. long and blade 10–20 cm. long and 4–7 cm. wide, very glabrous on both surfaces or irregularly and sparsely appressed-setose beneath with straightish, slender, sharp, and at least finally white setae. Flowers yellowish-white, very fragrant. Capsule orange-colored when mature, glabrous, 3.6–4.6 cm. long, 3.5–4.6 cm. thick, 3–4 cm. wide. Seeds 8–9 mm. long and 6–6.5 mm. wide.

Type specimen: Collected by *Harold Saint John, J. W. Coulter, E. Y. Hashimoto, & D. D. Mitchell,* No. 11,442, shrub, 6 feet tall, flowers creamy-white and very fragrant, ripe fruit orange-colored, alt. 4,000 feet, Puuwaawaa, Puu Hualalai, Island of Hawaii, December 30, 1931 (Bish.).

Distribution: Known only from type locality in northwestern Hawaii.

Specimens examined: *Saint John et al.* 11,442 (type, Bish.: cotypes, Berl.; Field).

While discovered in the same locality as that for the species proper, var. *Saint-Johnii* is different in its leaves. Incidentally, it is a shrub and perhaps does not become a tree. Its leaves are glabrous beneath or at most sparsely appressed-setose with white, straightish hairs; only when emerging from the bud are they closely rufous-pubescent. In the species proper, also in the var. *longifolium*, the leaves are more or less permanently dense-tomentose beneath with a light to dark brown or reddish-brown wool.

24. **Pittosporum hawaiiense** Hillebr. Fl. Haw. Isls. 26. 1888; *Pittosporum hawaiense* Hillebr. *ex* Drake del Cast. Ill. Fl. Ins. Mar. Pacif. 110. 1890.

Small tree, ±5 meters tall; branches few, nearly straight, ascending, bark grayish-white. Leaves scattered or disposed in remote whorls, slenderly petiolate, petioles 2–6 cm. long; blade thickish, obovate- or oblanceolate-oblong, at apex abruptly and shortly acuminate or more rarely obtuse, 1.5–2.5 (rarely –3.6) dm. long and 4–7.5

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[1] It may be added that no positively *large*-fruited specimens, such as characterize indisputably the *species proper*, have been seen from elsewhere than the species proper's type locality of Puuwaawaa.

(rarely -10) cm. wide, more or less tomentose beneath or in age sometimes glabrate, brownish or pale-grayish-green when dry, veins impressed above and salient beneath. Flowers clustered on axillary or cauline or more rarely terminal peduncles (these tomentose and up to 1.5 cm. long). Bracts lanceolate-subulate to ovate-lanceolate, pubescent, 5–8 mm. long. Pedicels tomentose, 2–7 mm. long. Sepals ovate or triangular-ovate, glabrate or tomentose, 3–4 mm. long. Corolla cream-colored; tube 6–9 mm. long and well split except at top; lobes broadly ovate, about 5 mm. long, slightly pubescent in the bud but presently glabrate. Stamens as long as the corolla-tube, anthers oblong-sagittate. Ovary ovoid, tomentose, the similarly tomentose style almost twice as long. Capsule (when fresh) bluish-glaucous or colored, subquadrangular, cordate or cordate-truncate at base, rounded or more often truncate-rounded at top, ±3.2 cm. long, ±3 cm. wide, ±2.7 cm. thick; valves usually with a broad, deep, median, lengthwise furrow unless near top, variously rugose or grooved, the elevations rounded and finally often glabrate at least in irregular areas. Seeds black, smooth or minutely tuberculate, 7–8 mm. long.

Type specimen: Collected by *William Hillebrand*, in forests of Kona, Island of Hawaii (Berl.).

Distribution: Island of Hawaii.

Specimens examined: *Otto Degener* 10,991, in open forest, on slope of Hualalai between Huehue and Puuwaawaa, August 24, 1926 (Field); *Charles N. Forbes* 348*a*-*H*, Honomalino, Kona, July 23, 1911 (Field); *Forbes* 423-*H*, mountains behind Pahala, Kau, August 9–11, 1911 (Berl.; Bish.; Field; Gray; Kew); *Forbes* 1,083-*H*, between the lava flows of 1868 and 1887 in Kahuku, May, 1916 (Field); *William Hillebrand*, Kohala Range (Bish.; sterile spray with large leaves, the largest 14 × 4 inches, as noted by Hillebrand in his text: "A leaf-specimen picked in a gulch of the *Kohala* range has the largest leaves in the genus, 14′× 4′ "); *Hillebrand* 306, Kohala (Kew); *Hillebrand* (similarly) 306, Kona (Gray; Kew, 2 sheets); *James Macrae*, Mauna Kea, June, 1825 (Kew); *Joseph F. Rock* 10,011, alt. 2,300 feet, in forest above Naalehu, Kau, January 11, 1912 (Arn., 3 sheets; Berl.; Field; N.Y.); *Rock* (similarly) 10,011, Naalehu forests, Kau, January 12, 1912 (Bish.; Gray, 2 sheets); *Rock* 10,011*a*, alt. 6,000 feet, above Kahuku, 1868 Lava Flow, Kau, January 13, 1912 (Gray); *Rock* 17,134, alt. 6,000 feet, above Kahuku, 1868 Lava Flow, Kau, January 13, 1912 (Bish.); *Rock* 17,135, alt. 4,000 feet, in rain-forest, Kohala Mts., June, 1910

(Bish.); *Carl Skottsberg* 3,304, along road below Naalehu, South Kona, September 16, 1938 (Goth.).

The "bluish-glaucous" capsules are especially noted by Rock (Indig. Trees Haw. Isls. 171. 1913). In the dried herbarium material these have turned to a more or less brownish-black. Hillebrand described the flowers as subsessile, relying doubtless upon his subflowering specimens, which indeed do have subsessile flowers. Specimens at full anthesis, however, have pedicels up to 7 mm. long, as described by Rock (*op. cit.* 169).

Hillebrand's specimens have somewhat narrower and thinner leaves with the veins less deeply impressed but seem well enough connected with the other cited material to preclude varietal segregations.

SOME NEW OR OTHERWISE NOTEWORTHY MEXICAN COREOPSIDEAE

(GENERA HETEROSPERMA CAV. AND BIDENS L.)

AND A NOTE ON XYLOSMA HAWAIIENSE SEEM.

EARL EDWARD SHERFF

Heterosperma Coreocarpoides (Sherff) comb. nov.; *Bidens Coreocarpoides* Sherff, Bot. Gaz. 97: 185. 1935.

The type of *Bidens Coreocarpoides* was collected by E. W. Nelson and E. A. Goldman, No. 7,389, at altitude of 15–60 meters, from Cape San Lucas to San José del Cabo, southernmost Baja California, January 4, 1906. The lone, type specimen originally seen (U. S. Nat. Herb.) lacked achenes and had merely ovaries with a body ±1.5 mm. long.

Recently, Miss Alice Eastwood, Curator of the Botanical Department, California Academy of Sciences, very kindly sent me some herbarium specimens collected by Miss Betty J. Hammerly in Baja California. Among these were several (Hammerly 372) from Sierra de la Laguna, referable to this species but with numerous mature achenes and revealing at once a definite affinity with *Heterosperma* Cav., to which genus my formerly published *Bidens Coreocarpoides* must be transferred. Through Miss Hammerly's excellent material it is possible now to assign here a specimen collected years ago by Brandegee in the same locality. Brandegee had referred his material to *Heterosperma Xanti* A. Gray, a coarser and larger herb which can be told instantly by its large flowering heads, these measuring at anthesis up to 3.5 cm., not 1.2–1.7 cm., across.[1]

With the additional specimens now available it has been possible to redraw the description of the species and a revised description (*descriptio emendata*) is presented herewith:

Herba annua, 1.5–2.5 dm. alta, gracilis, subsimplex vel ramosa, ramis gracillimis erectis vel imis arcuato-adscendentibus glabris (juvenibus prope basim interdum hispidulis) omnibus in 1 vel 2

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[1] Nelson & Goldman 7,474 (Field), which may be taken to represent true *H. Xanti*, has 8–10 exterior bracts to the involucre, ligulate florets varying from 6 to 10, the ligules proper 1.4–1.6 cm. long, etc.

pedunculos glabros unicapitulatos nudos vel inferne 1-bracteolatos 5–12 cm. longos terminantibus. Folia opposita, petiolata petiolo marginato glabro vel inferne paulum ciliato plerumque 4–8 (raro –16) mm. longo; lamina simplice vel pro foliis principalibus plerumque pinnata vel rarius subbipinnata 1–1.5 (raro usque ad 2.7) cm. longa; segmentis primariis 1 vel 2 jugis, ultimis crassiusculis, apice obtusis, 0.5–1.2 mm. latis, glabris vel marginibus et nervo mediano plus minusve spinuloso-setulosis. Capitula radiata, erecta, ad anthesin 5–7 mm. alta et circ. 1.2–1.7 cm. lata. Involucrum glabratum, primum subhemisphaericum; bracteis exterioribus 6–8, anguste linearibus, apice saepius subacutis, 2–3.5 mm. longis, quam interioribus ovato-oblongis vel latissime lanceolatis moderate brevioribus. Flores ligulati plerumque 6, aurei vel aurantiaci, ligula anguste vel late oblonga vel elliptico-ovata apice bidenticulata circ. 5 mm. longa, tubo circ. 1.5 mm. longo. Achaenia atra, extima oblanceolato-oblonga, circ. 3 mm. longa, dorso convexo laevia vel subsparsim tuberculata, marginibus (saepe incurvatis) ac faciei ventralis nervo mediano pectinatim cartilagineo-cristata lobulis albidis stramineisve, apice nunc calva nunc biaristata aristis gracilibus irregulariter arcuatis retrorsum hamosis ±1 mm. longis; interiora gracillime linearia, corpore glabro plus minusve tetragono usque ad 9 mm. longo, apice 2–4-aristato aristis subrectis gracilibus subpatentibus retrorsum hamosis usque ad circ. 3 mm. longis.

Annual herb, 1.5–2.5 dm. tall, slender, subsimple or branched; branches very slender, erect or lowest ones curved-ascending, glabrous (sometimes hispidulous near base when young), all ending in one or two peduncles, these glabrous, monocephalous, 5–12 cm. long, naked or toward base 1-bracteolate. Leaves opposite, petiolate; petiole margined, glabrous or infernally somewhat ciliate, commonly 4–8 (rarely –16) mm. long; blade simple or for the principal leaves commonly pinnate or more rarely subbipinnate, 1–1.5 (rarely up to 2.7) cm. long; primary segments one or two pairs, ultimate ones thickish, obtuse at apex, 0.5–1.2 mm. wide, glabrous or at margins and on median nerve more or less spinulose-setulose. Heads radiate, erect, at anthesis 5–7 mm. tall and about 1.2–1.7 cm. wide. Involucre glabrate, at first subhemispherical; outer bracts 6–8, narrowly linear, at apex more often subacute, 2–3.5 mm. long; inner bracts ovate-oblong or very widely lanceolate, moderately longer. Ligulate florets commonly 6, golden or orange; ligule narrowly or broadly oblong or elliptic-ovate, at apex bidenticulate, about 5 mm. long; tube about 1.5 mm. long. Achenes black; outermost ones oblanceo-

late-oblong, about 3 mm. long, smooth or subsparsely tuberculate on the convex dorsal surface, on median nerve of ventral face and at margins (which are often incurved) pectinately cartilaginous-crested with tiny whitish or straw-colored lobes, at apex now bald now 2-aristate (aristae slender, irregularly arcuate, retrorsely barbed, ±1 mm. long); inner ones very slenderly linear, up to 9 mm. long as to glabrous and more or less tetragonal body, at apex 2–4-aristate (aristae straightish, slender, somewhat spreading, retrorsely barbed, up to about 3 mm. long).

Specimens examined (additional to Nelson & Goldman 7,389, above cited): *Townsend Stith Brandegee* 317, Sierra de la Laguna, southernmost part of Baja (Lower) California, January 25, 1890 (type, Field); *Miss Betty J. Hammerly* 372, on dry, sandy slope near stream on west edge of the meadow on Sierra de la Laguna, alt. about 5,000 feet, October 13, 1941 (Calif. Acad.; Field, etc.).

It should be noted in passing that Brandegee distributed under the same collection number, 317, a quite different species of *Heterosperma* which he had collected in September of the same year at San José del Cabo. This species was likewise assumed by Brandegee to be *Heterosperma Xanti* A. Gray, but it differs sharply from that species and is here set forth as:

Heterosperma Brandegeei sp. nov.

Herba annua, erecta, gracilis, simplex vel parce ramosa, ±2 dm. alta, caule glabro vel superne sparsim hispidulo. Folia opposita, mediana conferta, principalia 4–8 cm. longa et bipinnatifida vel irregulariter bipinnata; petiolo marginato interdum angustissimo usque ad 2.3 cm. longo, sparsim ciliato aliter glabro; segmentis ultimis usque ad 1.6 mm. latis, apice acutis, margine raro plano saepe spinuloso-ciliatis. Capitula solitaria, gracillime pedunculata pedunculo glabro vel inferne sparsissime hispidulo 5–9 cm. longo caulem aut 2 vel 3 ramos terminante, radiata, erecta, pansa ad anthesin 5–7 mm. alta et circ. 1.2–1.5 cm. lata. Involucrum glabrum bracteis exterioribus circ. 10 moderate vel saepius angustissime linearibus, 2–3.5 mm. longis, apice acutis, quam interioribus ovatis moderate brevioribus. Flores ligulati circ. 6, flavi, ligula ovato-oblonga vel obovata, apice integra vel bidenticulata, ±4.5 mm. longa. Achaenia matura non visa. Ovaria exteriora glabrata, plana, oblanceolato-cuneata, corpore circ. 2 mm. longa, 2-aristata aristis retrorsum hamosis et ±1.5 mm. longis; interiora angustiora, longiora, saltem 3-aristata aristis aliis similibus.

Annual herb, erect, slender, simple or slightly branched, ±2 dm. tall, stem glabrous or supernally sparse-hispidulous. Leaves opposite, median ones crowded together, principal ones 4–8 cm. long and bipinnatifid or irregularly bipinnate; petiole margined, at times very narrow, up to 2.3 cm. long, sparsely ciliate but otherwise glabrous; ultimate segments up to 1.6 mm. wide, at apex acute, the rarely flat margin often spinulose-ciliate. Heads solitary, very slenderly pedunculate (peduncle glabrous or infernally very sparsely hispidulous, 5–9 cm. long, terminating the stem or 2 or 3 branches), radiate, erect, when expanded at anthesis 5–7 mm. tall and about 1.2–1.5 cm. wide. Involucre glabrous; exterior bracts about 10, moderately or more often very narrowly linear, 2–3.5 mm. long, at apex acute; interior ones ovate, moderately longer. Ligulate florets about 6, yellow; ligule ovate-oblong or obovate, at apex entire or bidenticulate, ±4.5 mm. long. Mature achenes not seen. Exterior ovaries glabrate, flat, oblanceolate-cuneate, about 2 mm. long as to body, biaristate, the aristae retrorsely barbed and ±1.5 mm. long; interior ones narrower, longer, at least 3-aristate, aristae similar to the others.

Specimens examined: *Townsend Stith Brandegee* (similarly) 317, San José del Cabo, southernmost part of Baja (Lower) California, September 29, 1890 (type, Field).

From *Heterosperma Xanti* A. Gray, *H. Brandegeei* differs at once in its smaller and more delicate habit, its rather densely crowded, much larger median leaves, and its small flowering heads. Its median leaves, as viewed on the herbarium sheet, give immediately the impression of being elongate or attenuate in their rachis and segments. Between two successive pairs of primary leaf-segments a rachis may be 1.5 cm. or more in length; and some terminal leaf-segments are 3 cm. or more in length. The unique foliage likewise will distinguish *H. Brandegeei* from *H. microglossum*.

Bidens Bigelovii var. **pueblensis** Sherff, Bot. Gaz. 88: 287. 1929; Field Mus. Bot. Ser. 16: 363. 1937.

Plants collected by Brandegee (T. S., in herb. Univ. Calif. and herb. N. Y. Bot. Gard.) at Sierra de la Laguna, Baja (Lower) California, October 4, 1899, had been determined by him as *Bidens bipinnata* L. The material was atypic for that species, but his judgment was nevertheless followed in my subsequent monographic treatment of the genus *Bidens* (Field Mus. Bot. Ser. 16: 368. 1937). Recently additional material has been collected in the same locality:

Miss Betty J. Hammerly 374, alt. about 5,000 feet, on sandy slope in heavy oak shade above stream on side of the meadow on Sierra de la Laguna, October 13, 1941. Both collections seem better referred to *Bidens Bigelovii* var. *pueblensis* Sherff. The geographic range of this variety, formerly described by me as embracing the states of "Michoacan, Mexico (with Federal District), Puebla, Oaxaca, and Chiapas" in southern Mexico, is thus seen to be extended westward into the southernmost part, known as the cape region, of Baja California.

Bidens leptocephala Hammerlyae var. nov.

Usque ad ±4 dm. alta, foliorum segmentis forsitan latioribus. Capitula demum majora. Achaenia circ. 6–10, graciliter elongato-linearia, recta vel pauca superne arcuata; corpore usque ad 2.3 cm. longa, subatra vel apice straminea, pauca (sine dubio extima) subdense sed breviter tuberculato-hispida, alia infra subsparsim breviterque supra conspicue longiusque hispida; 3 (raro 2 vel 4) aristis plerumque 2.5–5.2 mm. longis.

Up to ±4 dm. tall, segments of leaves perhaps wider. Heads finally larger. Achenes about 6–10, slenderly elongate-linear, straight or a few curved above; up to 2.3 cm. long as to body proper, blackish or at apex straw-colored, a few (without doubt the outermost ones) somewhat densely but shortly tuberculate-hispid, the others infernally somewhat sparsely short-hispid, supernally more noticeably and elongately hispid; aristae (commonly 3, rarely 2 or 4) usually 2.5–5.2 mm. long.

Specimens examined: *Miss Betty J. Hammerly* 302, alt. about 2,000 feet, on shaded north slope near river at Las Animas, ranch at river-fork near base of El Picacho Peak in Sierra de la Laguna, Baja (Lower) California, October 12, 1941 (type, herb. Calif. Acad. Sci.).

A plant with the foliar aspect somewhat as in *Bidens bipinnata* L. but with the disc-florets and achenes few as in *B. leptocephala* Sherff. In the latter species, the achenes are normally biaristate with aristae under 3 mm. long, certain outer achenes are apt to be brownish or reddish-brown and with a body 6–8 mm. long, and the inner achenes have bodies 0.9–1.4 cm. long. The present variety differs sharply in having the achenes mostly triaristate with aristae very commonly 3–4.5 mm. long, the achenial bodies all more or less black or blackish and all considerably longer, ranging from ±1.3 cm. for the outer achenes up to 2.3 cm. for the inner ones.

Bidens leptocephala Ulinei var. nov.

Caulis ramique plus minusve patenti-hispiduli, foliis pinnatis vel subbipinnatis. Involucrum extus hispidum. Achaenia interdum longiora, corporibus usque ad 1.8 cm. longis.

Stem and branches more or less spreading-hispidulous, leaves pinnate or subbipinnate. Involucre externally hispid. Achenes at times longer, their bodies up to 1.8 cm. long.

Specimens examined: *C. H. Mueller* 3,480, in shady meadows and open pine forest, Cañon Huahuatan, 10 miles southeast of Madera, Municipio de Temosachic, State of Chihuahua, Mexico, September 24, 1939 (Field); *Cyrus Guernsey Pringle* 1,574, on shaded banks, Sierra Madre, State of Chihuahua, September 17, 1887 (type, Field).

In my revisional treatment of the genus *Bidens* (Field Mus. Bot. Ser. 16: 365. 1937), I included Pringle 1,574 with *Bidens leptocephala* proper, notwithstanding the fact that it differed sharply in the hispid base of the involucre, etc. Examination of numerous additional specimens of *B. leptocephala* which have come into herbaria the past five years shows substantially no intergradations, thus suggesting the segregation of the Pringle plant as a distinct variety. The name is given in honor of Dr. Edwin Burton Uline, who many years ago examined the type plant and correctly asserted, in pencil on the sheet, that it was not *Bidens pilosa* L. as it had been called on the printed label which had been issued at Gray Herbarium. The type is very closely matched in essential characters by the Mueller material. This consists of six (as yet unmounted) entire specimens which were very kindly sent me by Dr. S. F. Blake, Senior Botanist of the United States Bureau of Plant Industry.

Xylosma hawaiiense Seem. Fl. Vit. 7. 1865; *Drypetes Forbesii* Sherff, Field Mus. Bot. Ser. 17: 560. 1939.

At the time of my transferring *Neowawraea Phyllanthoides* Rock to *Drypetes* (Sherff, *op. cit.* 562) a superficially similar, fruiting spray of a tree from Oahu (C. N. Forbes 1,008-*O*) was described. Relying all too much upon the usually very astute-minded C. N. Forbes' determination of the specimen as belonging to the Euphorbiaceae (his label gave *Antidesma platyphyllum* Mann), I assigned the species to *Drypetes*, naming it *D. Forbesii*. Recently I came to suspect that, notwithstanding Forbes' reference of the type plant to a genus of the Euphorbiaceae, it might rather belong in the

Flacourtiaceae, under *Xylosma* Forst.[1] The aid of Dr. Harold St. John, of the University of Hawaii, was enlisted and he very kindly made a re-examination of the type of *Drypetes Forbesii*. Under date of May 2, 1942, he wrote: "The type sheet of *Drypetes Forbesii* Sherff has a single large branch in fruit. The stem, lenticels, phyllotaxy, leaves, and fruit are exactly like those of *Xylosma* . . . . The attached fruits and the two loose ones in the pocket were all whole and showed no sign of sectioning. The fruits all had two sessile stigmas. I sectioned three of them. All three were 1-celled, with 2–5 parietal apparently amphitropous ovules. Each fruit developed from 1–2 good seeds. I compared all parts of your plant with *Xylosma* and found that it agreed with it completely. I have redetermined the specimen as *Xylosma hawaiiense* Seem., following Sleumer's recent revision."

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[1] Dr. F. R. Fosberg tells me that the similarity of *Antidesma* and *Xylosma* in the field is often so strong and deceptive as to deceive the best botanists unless an anatomical study of the fruit's interior (in the case of mature pistillate specimens) is made.

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